

1044b UIC - EAST POPLAR OIL FIELD
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13659



PRODUCTION DEPT.
FILE COPY

MURPHY CORPORATION

EAST POPLAR UNIT WELL NO. 15

Roosevelt County, Montana

General File Copy

MURPHY CORPORATION

EAST POPLAR UNIT WELL NO. 15

C NW NW Section 11, Township 28N, Range 51E
Roosevelt County, Montana

Elevation 2116' RKB

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MURPHY CORPORATION

LOCATION: C NE NW Section 11, Township 28 North, Range 51 East,
Roosevelt County, Montana.

ELEVATION: 2104' Ground; 2116' MEB.

SPUDED: January 1, 1953.

COMPLETED: February 18, 1953.

TOTAL DEPTH: 5815' Driller equals 5817' Schlumberger.

HISTORY

January 1: Spudded at 6:00 A.M. Drilled 12 $\frac{1}{4}$ " hole from 0' to 970'.

January 2: Ran Schlumberger E.S. Set 949.32' of 9 5/8" O.D. 36#, J-55
8 thd. casing at 962.32', landed 13' below rotary bushing.
Two HWC0 centralizers at 879.04' and 664.38'. Cemented
with 400 sacks of Dakota cement. Clean cement circulated
to surface. Bumped plug with 1400#; released pressure,
plug held okay. Plug down at 5:07 P.M.

January 3: Waiting on cement.

January 4: Went in hole with 8 3/4" jet rock bit and drilled 210' of
sand that had settled in the pipe. Tested pipe with 1025#
pressure for 30 minutes, held okay. Started drilling plug
at 10:00 P.M. Drilled plug and drilled to 1117'.

January 5-12: Drilled from 1117' to 3734' with 8 3/4" jet bit. Strapped
pipe and corrected depth, 3734 = 3725 SIM.

January 12-19: Drilled from 3734 to 4464 with 8 3/4" jet bit.

January 19-23: Rig repairs; replacing shaft in draw-works.

January 23-27: Drilled from 4464 to 4911'. Circulated samples at 4885 and
at 4911'. Went in hole with core barrel and started cutting
Core No. 1 at 4911' with 7 7/8" Christianson Diamond Core
Bit.

January 27: Finished cutting and pulled Core No. 1, 4911 to 4918', re-
covered 4 feet. Went in hole with 8 3/4" bit and reamed
rat hole. Drilled 4 feet from 4918 to 4922. Ran Schlum-
berger E.S. to total depth.

January 28: Conditioned hole and started in hole with test tool.

January 29: Couldn't get to bottom with test tool. Pulled tool and went
in hole with bit. Drilled from 4922 to 4935. Went in hole
with test tool; pulled test tool after mis-run.

HISTORY continued:

January 30: Conditioned hole and ran Drill Stem Test No. 1. Went in hole with bit and drilled from 4975 to 4975.

January 30-
February 4: Drilled from 4975 to 5480 with 8 3/4" jet bit.

February 4: Cut and pulled Core No. 2 from 5480 to 5500', recovered 20 feet; started cutting Core No. 3 at 5500 feet.

February 5: Finished cutting and pulled Core No. 3, 5500 to 5512', and recovered 12 feet. Cut and pulled Core No. 4 from 5512 to 5520 feet, recovered 8 feet. Attempted to run Drill Stem Test No. 2, but had mis-run.

February 6: Ran Drill Stem Test No. 2. Drilled from 5520 to 5560 feet.

February 7: Drilled from 5560 to 5624 and started cutting Core No. 5 at 5624 feet.

February 8: Cut and pulled Core No. 5 from 5624 to 5660', recovered 36 feet. Drilled from 5660 to 5702 feet.

February 9: Drilled from 5702 to 5780 feet.

February 10: Cut and pulled Core No. 6 from 5780 to 5815', recovered 35 feet. Ran Schlumberger E.S. and Microlog.

February 11: Layed down drill pipe; ran 175 joints (5788.40') of 5 1/2" 15.50, J-55, American casing. Landed 11.60' below rotary bushing. Float shoe at 5800'; float at 5761.87'; centralizers at 4885, 5514, 5610, 5702, 5784; scratchers at 4888-4893, 4895.40-4900, 4902-5007, 5505-5510, 5520-5530, 5624-5634, 5646-5651, 5665-5680, 5775-5780, 5788-5798. Cemented with 250 sacks of regular Dakota bulk cement with 2% gel. Bumped plug 1075#; pipe rotated freely; plug down at 9:40 P.M.

February 12-14: Waiting on cement.

February 14: Tested casing with 1000# pressure. Drilled cement plug from 5759 to 5817 feet.

February 15-18: Well undergoing completion operations as set forth under "completion data".

February 18: Rig released at 6:00 P.M.

EAST POPLAR UNIT NO. 15

WELL HISTORY SUPPLEMENT
To Treat Formation For Scale and Corrosion

10-13-71 PSND 4992'

Acidized Heath Sand perforations 4891' to 98' with 110 gallons of 28% HCL and 110 gallons Tretolite WF 45 Scale and Corrosion Inhibitor as follows.

Pressured tubing to 600 PSI with flowline valve closed. Injected 110 gallons of 28% HCL (with Non-Emulsifier and Inhibitor added), down annulus, followed by 110 gallons WF 45 mixed with 20 bbls. formation fluid. Displaced acid and chemical with 103 bbls. formation fluid. Caught pressure with 67 bbls. in.

Max. Injection Pressure 1200 PSI
Max. Injection Rate 1-1/2 BPM
5 Min. S.I. Pressure 900 PSI
2 Hr. S.I. Pressure 50 PSI

Note: Tubing pressure decreased from 600 PSI to 50 PSI while injecting fluid down annulus due to temperature of fluid being pumped. Tubing pressure increased to 1200 PSI and remained the same while displacing.

EAST POPLAR UNIT NO. 15

Well History Supplement
To Acidize and Treat Formation For Scale and Corrosion

3-13-72 BSTD 4992'

Acidized the Heath Sand formation 4891-4893' with 500 gallons 15% acid (with inhibitor and non-emulsifier) plus 110 gallons 990 and 165 gallons 957 VISCO corrosion and scale inhibitor down the annulus as follows.

Pressured tubing to 600 PSI with down hole pump. Injected 110 gallons 990 VISCO (corrosion inhibitor) mixed with 10 bbls. Heath crude down annulus followed by 77 bbls. salt water.

Injected 500 gallons 15% acid down annulus followed by 165 gallons 957 (scale inhibitor) mixed with 110 bbls. salt water. Displaced treated water with 127 bbls. formation fluid (77 bbls. casing volume plus 50 bbls. over displacement). Shut in 24 hrs.

Max. Inj. Pressure	1400 PSI
Max. Inj. Rate	1-1/2 BPM
15 Min. S.I.	1150 PSI
2 Hr. S.I.	200 PSI
20 Hr. S.I.	Casing on Vacuum

Note: Caught pressure with 77 bbls. in tubing. Pressure decreased to 50 PSI while filling annulus, due to temperature of fluid being pumped. Tubing pressure increased to 1400 PSI and remained the same while displacing.

Well potentialled at 266 BHPD 13 BOPD 253 BHPD 95% W.C. 4-9-72

EAST POPLAR UNIT NO. 15

SUPPLEMENT TO WELL HISTORY

- 1-07-85 Pull out of hole with rods. Try to release tubing anchor, couldn't release it. Shut down waiting on Dia-Log.
- 1-08-85 Rig up Dia-Log. Set off rattle shot in anchor. Work anchor free, worked up hole 8'. Anchor stuck, twisted tubing off at 3792'. Pulled out of hole. Pick up 2 7/8" fishing tool and grapple. Trip in hole, catch fish, run Dia-Log rattle shot to back off tubing at 4491'. Backed off tubing 720'. Pulled out of hole, checked threads on tubing. Trip in hole, anchor fell down hole, couldn't tag it. Shut down waiting on tubing.
- 1-09-85 Tag tubing at 4150' screw into tubing, pull loose, start out of hole, anchor hung up at 4523', called Dia-Log. Ran Dia-Log chemical cutter, couldn't get below 3792' - bad spot in tubing. Tried to torque tubing to back off tubing. Fishing tool released. Pulled out of hole with grapple shot. Shut down for darkness.
- 1-10-85 Trip in hole to catch fish, caught fish. Rig up Dia-Log. Try to back off tubing at 4452', wouldn't back off. Rigged up another shot, backed tubing off at 4452'. Pulled out of hole. Shut down waiting on drill collars and jars.
- 1-11-85 Pick up over-shot jars and 6 drill collars. Trip in hole catch fish. Jarred on anchor until it came loose. Pulled out of hole. Shut down for darkness.
- 1-12-85 Lay down drill collars and tools. Hydro-test tubing to 6000#. Shut down for darkness.
- 1-13-85 Trip in hole with pump and rods. Hang well on. Rig down.

Note: Three-quarters of the old anchor cage, 3 slips and 2 friction springs were left in the hole.

EAST POPLAR UNIT NO. 15

SUPPLEMENT TO WELL HISTORY

- 3-26-92 Rig up pulling unit. Pull rods and pump. Tubing stuck at anchor. Shut down.
- 3-27-92 Start rig. Rig up Dia-Log run in hole to 4871'. Tubing stuck pull up to 4866'. Set string shot still stuck. Run jet cutter. Cut off at 4829.16'. Pull tubing pick up drill collars. Shut down.
- 3-28-92 Start rig and rig up tools. Run drill collars, fish tubing collars at 4829.16'. Jar on anchor 5 hours. Anchor still stuck. Rig broke down.
- 3-30-92 Worked on rig. Released fishing tool and pull tubing. Shut down.
- 3-31-92 Start rig, pick up washover pipe and shoe and drill collars. Run tubing to 4829.16. Start drilling. Drill to 4832'. Drilled hard. Stop. Pull tubing and tools. Shut down. (Act like casing collapsed).
- 4-01-92 Start rig, lay down tools, run pumping string. Start well pumping. Rig down.

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

East Poplar Unit D Battery and Wells EPU Nos. 6, 9, 11, & 15

The East Poplar Unit D Battery and the wells producing into the battery, EPU Nos. 6, 9, 11, and 15, are onshore production facilities located in Roosevelt County, Montana, in the East Poplar Unit Oil Field. The field is about 6 miles Northeast of Poplar, Montana, in Townships 28 and 29 North and Ranges 50 and 51 East.

The operator of the East Poplar Unit D Lease is Murphy Oil Corporation located at P. O. Box 547, Poplar, Montana 59255. The corporate headquarters are at 200 Jefferson Avenue, El Dorado, Arkansas, 71730.

The battery consists of a 6' x 27' vertical separator, a circulating pump with appropriate lines, and two 1,000 barrel galvanized bolted tanks. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks. An earthen pit of about 8,000 barrels capacity is located at the tank battery into which the separator or tanks may be emptied if needed for fluid storage.

The EPU No. 6 is a flowing well. The EPU Nos. 9, 11, & 15 are pumped with a rod pump. There are 4' x 4' x 2' cellars at each wellhead with overflow lines to earthen pits capable of holding a full days fluid production in case of a leak at the well site.

The field flow lines and the well casing of each well are cathodically protected. The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The facilities are about 2.2 miles from Poplar River. The terrain dips gently West. The soil is sandy and the fields are under cultivation. Because of the distance to the river, the type of soil, and the terrain the 8,000 barrel pit at the tank battery and the well cellars and overflow pits are sufficient secondary containment for these facilities.

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

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The foreman, Mr. Gerald Hagadone, is responsible for oil spill prevention at this facility. On each trip to the lease the pumper makes a visual inspection of all facilities and reports any malfunction to the foreman, Mr. Gerald Hagadone, and notes this malfunction on the ten day gauge report. There has been no reportable oil Spill Event during the twelve months prior to January 10, 1974.

The equipment is in excellent operating condition and there is no reasonable likelihood of a discharge or spill event.

The field flow lines and well casing of each well are cathodically protected.

Personnel are properly instructed in the operation and maintenance of equipment to prevent oil discharges, and applicable pollution control laws, rules and regulations. Each employee is given these instructions by the field foreman when they are employed. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. The procedures are reviewed every six months by the field foreman with each employee. When changes occur in procedures, each employee is informed.

Fluid in the 8,000 barrel storage pit is pumped to the salt water disposal unit if the water is brackish as determined by chloride tests. If only fresh water is contained in the pit it is disposed of by placing on lease roads to control dust and compact the roads. Any oil in the pit is pumped back through the separator with the water being sent to the disposal well. Oil skims are burned by state permits. There are no outlets from the storage pit and all fluids must be pumped out.

The two 1,000 barrel tanks are galvanized and are bolted construction. The tanks are vented to the atmosphere and have unrestricted 4" overflow lines between tanks.

The EPU No. 6 is a flowing well. The EPU Nos. 9, 11, & 15 are pumped with a rod pump. There are 4' x 4' x 2' cellars at each of the pumping wellheads with overflow lines to earthen pits capable of holding a full days production in case of a leak at the well site.

The facilities are about 2.2 miles from the Poplar River. The terrain dips gently West. The soil is sandy and the fields are under cultivation. Because of the

distance to the river, the type of soil, and the terrain the 8,000 barrel pit at the tank battery and the well cellars and overflow pits are sufficient secondary containment for these facilities.

The tanks are observed daily by the pumper. Periodically, the foreman checks the entire tank battery and producing wells closely. If any trouble is suspected, the facility is shut down, the tanks and/or separator are emptied and cleaned. The facility is then thoroughly inspected by service company personnel, repairs are made if needed and the unit is placed back into service.

Produced salt water is pumped to a field gathering system for injection into a salt water disposal well. The above ground facilities are observed daily by the pumper and inspected by the foreman closely on his visits to the lease.

All salt water disposal flowlines are cement asbestos lines. These lines are buried and the surface is observed daily by the pumper.

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature _____

Name _____

Title _____

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

Printed Name Of Registered Professional Engineer

(Seal)

Signature Of Registered Professional Engineer

Date _____

Registration No. _____ State _____

Contingency Plans For An Oil Discharge

East Poplar Unit D Battery and Wells EPU Nos. 6, 9, 11, & 15

The field is visited twice daily by the pumper. Visual inspection is made on each facility on each visit to determine if any malfunction is occurring. The most likely potential oil discharges are checked thoroughly. Periodically, the field foreman, Mr. Gerald Hagadone, will conduct a close check of the entire facility.

The pumpers, Mr. Ferdinand Charette and Mr. Robert Atkinson, have been instructed in the operations and maintenance of equipment to prevent oil and water discharges and informed of the applicable pollution control laws, rules and regulations. If an oil discharge occurs, the pumper will immediately close the proper valves and/or shut down the production facility to stop the discharge. He will then call Mr. Gerald Hagadone who will in turn inform Mr. Bill Brown, District Superintendent. If needed, the proper state and federal agencies will be notified by Mr. Brown. The discharged oil will be reclaimed or disposed of by approved engineering procedures and in accordance to law.

In the event discharged oil collects on standing water such as a stock pond or rain water standing in a low spot, the oil will be pumped into a tank truck. The skim of oil left on the water will be removed by an oil skimmer owned by Murphy Oil Corporation. The skimmer can be towed to the field within an hours time.

If the discharge is in excess of 50 barrels of oil, the Montana Department of Health and Environmental Sciences in Helena will be notified by Mr. Brown.

If a Spill Event occurs as defined by federal law, the Environmental Protection Agency in Denver, Colorado will be notified by Mr. Brown.

Telephone numbers and personnel to be notified in case of an oil discharge are as follows:

Phone Numbers as listed on other copies will be
included on final copy.

Poor Quality Source Document

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scanned from the best
available source copy.

To view the actual hard copy,
contact the Region VIII Records
Center at (303) 312-6473.

To: District Engineer, U.S. Geological Survey
From: District Superintendent, Murphy Oil Corporation, Poplar, Montana 59255
Subject: Pollution Report

Spill ☒ Discharge _____ Blowout _____ Accident _____ Fire Or
Explosion _____

1. Specific Nature or Cause of Incident

Flowline leak on East Poplar Unit No. 15 flowline.

2. Location of Incident

150 yards from East Poplar Unit No. 15 wellhead

3. Description of Resultant Damage and Volume of Pollutant Discharged

9 barrels total fluid - 1 barrel oil and 8 barrels water

Minor damage to winter wheat field.

4. Date and Time of Occurrence

3/20/76 Discovered leak at approximately 9:00 A.M.

5. Length of Time Required to Control Incident or Contain Pollutants

4 Hours required to repair leak

6. Action Taken to Prevent Recurrence

Repaired the leak

7. Measures Taken to Clean Up Pollutants

Picked up all fluid possible.

8. The make or manufacturer, size, working and test pressures, date of installation, type of use, physical damage, etc., of any equipment causing or directly involved with the incident.

N/A

9. Other Federal or State Agencies Notified of Incident

Montana Oil and Gas Commission, Billings, Montana by copy of this form.

Signature Bruce M. Meas

Date March 20, 1976

Title District Superintendent

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana
(Workover No. 3)

HISTORY: This well completed in the Heath Zone June, 1969. Well was Frac with 4000# sand and 4000# of glass beads, but sanded out with 4000# of sand and 2000# beads out in formation. Put well to pumping with a potential of 346 BFPD 14% BS&W 298 BOPD and 48 BWPD. March, 1971 test 56 BFPD 88% BS&W 7 BOPD 49 BWPD (uneconomical). Accumulated production as of March 1, 1971 is 21,924 BO and 24,762 BW.

PROPOSAL: Acidize with 500 gallons 15% HCL with 110 gallons of Treatolite WF-23 (combination scale and corrosion inhibitor) added and overflushed with 100 bbls. of formation fluid.

JUSTIFICATION: This well has been pulled five (5) times in the past year for tubing leak or pump problem (1 time for tubing - 4 times for pump). On each job the pump was filled with gyp or the pump bbl. corroded into. Pump expenses for the past year have been \$650. The above proposal should last for a period of 3 months and any future inhibitor squeezes would be able to be done at approximately 1/3 this cost (if pressures are low enough) by doing job down the annulus. Production should increase by 25 to 100 BOPD if perforations are gyped up as is indicated. Decline curves for EPU 7 and 15 are enclosed for comparison.

ESTIMATED COST

Pulling 15 Hrs. at \$37.00 per hr.	\$ 550
Acid and Pump Truck	\$ 625
Treatolite WF-23	\$ 275
Packer Rental	\$ 400
Misc. Labor, Material and Trucking	\$ 150
Total Estimated Cost	\$ 2,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 629
Munoco Company	2.096565%	\$ 42
Placid Oil Company	33.545935%	\$ 671
Humble Oil and Refining Company	16.335860%	\$ 327
Phillips Petroleum Company	16.335860%	\$ 327
C. F. Lundgren	.238210%	\$ 4

APPROVAL OF EXPENDITURE

Requested By:

Approved By:

M. T. James

Date

Ira Johnson

Date

W. J. Thornton

Date

AUTHORITY FOR EXPENDITURE

MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana
 (Workover No. 5)

Proposal and Justification: It is proposed to squeeze the Heath formation and reopen the B-1 & 2 Zones and pump test.

East Poplar Unit No. 15 is pumping from the Heath formation at the rate of 238 BFPD 5 BOPD 233 BWPD 98% BS&W (May, 1972 test) which is uneconomical. The pumping fluid level shows 200' of fluid over the pump. A Wasp bridge plug and 1 sack of cement was set at 4992' leaving the B-1 & 2 perforations open. The last B-Zone test was May, 1969 showing 319 BFPD 19 BOPD 300 BWPD 94% BS&W. Three acid jobs and inhibitor squeezes (scale and corrosion) have been tried on the Heath to increase production with the last two failing. The A Zone is a potential pay in the event the B-1 & 2 fail to prove economical. B-Zone production should be as good as the last test shows or 20 BOPD. Payout at 20 BOPD would be 261 days using \$1.36 per bbl. net.

ESTIMATED COST

Pulling Unit, 70 hrs. at \$40/hr.	\$ 2,800
Packer and Manifold Rental	\$ 1,000
Cement and Services	\$ 1,500
Drilling Equipment Rental	\$ 750
500 Gallon Acid Job, if needed	\$ 500
Misc. Labor, Material and Supervision	\$ 500
TOTAL ESTIMATED COST	\$ 7,050

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 2,217
Placid Oil Company	33.545035%	\$ 2,365
Humble Oil and Refining Company	16.335860%	\$ 1,152
Phillips Petroleum Company	16.335860%	\$ 1,152
Munoco Company	2.096565%	\$ 148
C. F. Lundgren	.238210%	\$ 16

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. G. Brown 6-15-72 A. W. Simpson
 W. G. Brown Date A. W. Simpson Date

WGB/sb
 June 14, 1972

AUTHORITY FOR EXPENDITUREMURPHY CORPORATION - EAST POPLAR UNIT #15Center of NW of NW of Sec. 11, Twp. 28 N, Rge. 51E, Roosevelt Co., Montana

<u>WELL DRILLING & CONSTRUCTION EXPENSE:</u>	<u>TO CSG.PT.</u>	<u>COMP. & EQUIP.</u>	<u>TOTAL COST</u>
Drilling: Footage - 5800' @ \$8/ft.	\$ 46,400	\$	\$ 46,400
Day Work - 5 days @ \$925/day		4,625	4,625
Loc. survey, permit & prep.	200		200
Roads, fences, cattleguards, etc.	250		250
Mud mat. & chem., incl. oil & gas	5,200		5,200
Fuel	5,500		5,500
Water	250		250
Drilling bits, baskets, etc.		200	200
Cementing casing	900	950	1,850
Coring materials & services	3,500		3,500
Testing services, incl. swabbing	1,800	300	2,100
Perforating services		650	650
Other logs, surveys & analyses	1,400	650	2,050
Hydrafrac, acidize, etc. incl. oil		750	750
Float equip., centralizers, etc.	125	250	375
Tubular inspection, testing, etc.		1,200	1,200
Trucking, welding & other labor	500	600	1,100
Supervision & Miscellaneous	1,800	1,200	3,000
Total Est. Well Drilg. & Const. Exp.	67,825	11,375	79,200
<u>WELL EQUIPMENT COSTS:</u>			
Casing: 1000' of 9-5/8" O.D.	3,300		3,300
Casing: 6000' of 5-1/2" O.D.		13,200	13,200
Tubing: 6000' of 2-3/8" O.D.		3,300	3,300
Packers, etc.		650	650
Casing head & connections	300		300
Xmas tree & connections		1,200	1,200
Total Est. Well Equip. Costs	3,600	18,350	21,950
Total Est. Cost of Well	71,425	29,725	101,150
<u>LEASE EQUIPMENT:</u>			
Flow lines		800	800
Other line pipe, valves & fittings		750	750
Trucking, welding & other labor		800	800
Miscellaneous		700	700
Total Est. Cost of Lease Equip.	--	3,050	3,050
TOTAL EST. COST OF WELL & LEASE EQUIP.	\$ 71,425	\$ 32,775	\$104,200

APPORTIONMENT OF TOTAL ESTIMATED COSTSAPPROVAL OF EXPENDITUREProduction DepartmentRequested by _____
Date _____Approved by _____
Date _____ V.P.Executive DepartmentApproved by _____
Date _____ Pres.APPROVED

By _____

Date _____

Lease No. Subject to Federal
Unit Agreement
WELL AUTHORIZATION FOR East Poplar Unit
Lease Name #15
Well No.

Location: NW/4 of NW/4 of Section
11-28N-51E

Pool Name: East Poplar

County: Roosevelt State: Montana

Lease Expiration: Subject to Federal Unit Royalty and/or Encumbrances: 1/8 Royalty, plus
The lease is actually burdened with an ORR of 1/8 of 8/8, however 18.6% ORR
since this must be paid by the Placid-Murphy group who contributed
the lease to the unit, their interest in proceeds allotted to the lease will be
Lease Ownership and Operator: burdened with the ORR shown.
Murphy Corp. (operator) 14.675953%; Marine Oil Company 16.772517%; Manoco Company 2.096565%;
Placid Oil Company 33.545035%; Carter Oil Company 16.335860%; Phillips Petroleum Company
16.335860%; C. F. Lundgren .238210%
Operating Agreement: M-171

Title Approved by: Examined by Coleman, Jameson, & Lamey. They believe that our title can
be established or sustained by adverse possession against anyone, except possibly owners
From Geological Recommendation: of an undivided 3% of the minerals.

Objective Formation and Depth: Madison 5900

Type of Well: Oil X Gas

Reason for Drilling: Field Development.

Additional Remarks:

M.C. Lamm 9/26/52
Land and Geological Date
Departments

Preliminary Estimated Cost of Completed Producer --- Gross: \$104,800

Net to Murphy: 15,292

Preliminary Estimated Cost of Dry Hole --- Gross: 71,425

Net to Murphy: 10,482

Tubular Program:

1000' of 9-5/8" O.D. casing
6000' of 5-1/2" O.D. casing
6000' of 2-3/8" O.D. tubing

P. R. Curtis Pm
Production Department Date 9-30-52

APPROVED:

Original Signed By C. H. Murphy, Jr.

President

OCT 3 1952

Budget Account:

Copies:

File #15

A.F.E. No. 8-5019

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 15
C NW NW Section 11, T28N, R51E, Roosevelt County, Montana
(Installation of Pumping Unit)

Pulling Unit 2 - 12 hour days @ \$300	\$ 600
Pumping Unit complete with motor	5,650
Labor & materials setting unit (complete)	950
Rods, pump, & well head equipment	3,000
Trucking, small fittings, dirt work, & incidentals	400
Change 3500' of 2 3/8" tubing for 3500' of 2 7/8" tubing	770

Total Estimated Cost \$11,370

Status: "C" Zone tested July 7, 1957 - 591 BFPD, 91% water (538 BFPD, 53 BOPD), 1/4" choke, TFP 100#. Shut in July 15, 1957 due to salt water disposal problem.

"B-1" and "B-2" Zones co-mingled (dead). Last test April 15, 1956 - open flow, 291 BFPD, 38% water (181 BOPD, 110 BFPD). The "B" Zones required circulating with oil 2-3 times a week to keep flowing and were blanked off on April 17, 1956; the "C" Zone was opened to produce the state allowable of 150 BOPD.

EFU #15 - state pro-rated allowable - 150 BOPD, and is located in competitive area.

Proposed Plan to Increase Production and Lower Water Volume: Blank off the "C" Zone with Baker retrievable latch on DR plug. Set in model "D" production packer at 5780'. (The "C" Zone can be reopened for production by retrieving the DR plug). Set pumping unit and pump the "B-1" and "B-2" Zones co-mingled.

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Corporation	31.448470 %	\$ 3,576
Munoco Company	2.096565 %	238
Flacid Oil Company	33.545035 %	3,814
Carter Oil Company	16.335860 %	1,857
Phillips Petroleum Company	16.335860 %	1,857
C. F. Lundgren	.238210 %	28

APPROVAL OF EXPENDITURE

Requested by: *MLH* 7-16-57
 Date

Recommend Approval:

Harold G. Miller JUL 19 1957
 Division Production Supt. Date

Staff Production Man Date

Recommend Approval:

Recommend Approval:

Gordon Kirby JUL 19 1957
 Division Manager Date

Budget Supervisor Date

Approved:

Vice President-Operations Date

MIJ:br
 7-16-57

MTJ:MEH
12-18-58

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana
Test the Heath Sand

PRESENT STATUS: Pumping from the B-1 & 2 Zones. Well Test 4-7-69: 324 BFPD, 94% water, 19 BOPD, 305 BWPD.

HISTORY: Workover No 1: DOC squeezed the B-1 & 2 Zones. The C-Zone is watered out. DST Heath Sand recovered 390' clean oil, 180' O & G cut mud, & 445' of muddy salt water with show of oil.

E. A. Polumbus, Jr. Huber No. 1, SE NE Section 10, T28N, R51E, was recomplected in the Heath Sand. Tested pumping: 229 BOPD, 98 BWPD from Heath Sand perforations 2783'-2801'.

STRUCTURALLY: Huber No. 1 is 17' high to East Poplar Unit No. 7. Production tested water in the Heath Sand. The Heath Sand porosity in East Poplar Unit No. 15 is 7' high to the Huber No. 1.

PROPOSAL: Run Cement Bond, Neutron and Collar Logs. Set drillable bridge plug with one sack of cement on top (block squeeze if needed). Perforate the Heath Sand porosity 4891-99' (8'), 1 hole per foot. Swab test. Acidize with 500 gallons (if needed) to clean up and sand frac with 10,000# 20-40 sand and 5000# 12-20 beads. Production test. Payout at 200 BOPD at \$1.62 per barrel net will be 48 days.

ESTIMATED COSTS

Pulling Unit, 60 hrs. at \$36 per hour	\$ 2,150
Run Cement Bond, Neutron, and Collar Logs. Set bridge plug with one sack of cement	1,525
Block squeeze (if needed) with 50 sacks Latex	1,475
500 Gallon Acid Job (if needed)	575
Sand Frac with 10,000# Sand and 5000# beads	5,250
Facilities - Metering Separator Cond. No. 2 (Stock)	4,000
Misc. Labor, Tools, Trucking & Material	600
TOTAL ESTIMATED COSTS	\$15,575

APPORTIONMENT OF TOTAL ESTIMATED COSTS

Murphy Oil Corporation	31.448470%	\$ 4,898
Placid Oil Company	33.545035%	5,225
Humble Oil and Refining Company	16.335860%	2,544
Drilling Specialties Company	16.335860%	2,544
Munoco Company	2.096565%	327
C. F. Lundgren	.238210%	37

APPROVAL OF EXPENDITURE

Requested By:

Recommended Approval:

M. T. James

5-7-69

Date

W. J. Thornton

5-7-69

Date

APPROVED:

R. J. Sweeney

5-11-69

Date

cm

5-9-69

AUTHORITY FOR EXPENDITURE
WYOMING OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW 1/4 Section 11, T28N, R51E, Roosevelt County, Montana
(Test The Heath Sand)

PRESSENT STATUS: Pumping from the D-1 & 2 Zones. Well Test 4-7-69 324 BFPD 94% Water
 19 BOPD 305 MWPL.

HISTORY: Workover No. 1 DSC squeezed the D-1 & 2 Zones. The C-Zone is watered out. DSW
 Heath Sand recovered 390' clean oil, 100' C & C cut mud, and 445' of muddy salt water with
 chrv of oil.

E. A. Columbus, Jr. Huber No. 1 SE NE Section 10, T28N, R51E was recompleted in the Heath
 Sand. Tested pumping 220 BOPD 90 BWPD from Heath Sand perforations -2783' - 2801'.

STRUCTURALLY: Huber No. 1 is 17' high to East Poplar Unit No. 7. Production tested water
 in the Heath Sand. The Heath Sand porosity in East Poplar Unit No. 15 is 7' high to the
 Huber No. 1.

PROPOSAL: Run Cement Bond, Neutron and Collar Logs. Set drillable bridge plug with one
 sack of cement on top (block squeeze if needed). Perforate the Heath Sand porosity 4851-99'
 (8') 1 hole per foot. Swab test. Acidize with 500 gallons (if needed) to clean up and
 Sand Frac with 10,000# 20-40 sand and 5000# 12-20 beads. Production test.

(Pay out at 200 BOPD at \$1.62 per bbl. Net 40 Days)

ESTIMATED COST

Pulling Unit, 60 Hrs. at \$36.00 per hr.	\$ 2,150.00
Run Cement Bond, Neutron, and Collar Logs. Set bridge plug with one sack of cement	\$ 1,525.00
Block squeeze (if needed) with 50 sacks Later	\$ 1,475.00
500 Gallon Acid Job (if needed)	\$ 575.00
Sand Frac with 10,000 sand and 5,000# beads	\$ 5,250.00
Facilities - Metering Separator Class No. 2 (Stock)	\$ 4,000.00
Misc. Labor, Tools, Trucking and Material	\$ 600.00
TOTAL ESTIMATED COST	\$15,575.00

APPORTIONMENT OF TOTAL ESTIMATED COST

APPROVAL OF EXPENDITURE

Requested by:

Approved:

H. T. Jones
 H. T. Jones

5-7-69
 Date

W. J. Thornton

 Date

HTJ/sb

May 7, 1969

HFE File

A.F.E. No. 9-1518

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana

HISTORY: Completed in the Heath Sand perforations 4891-99'. Pumped natural 85 BFPD 12% Water Cut 73 EOPD 10 BWPD.

Sand Frac job sanded out with 8,000# sand and beads out into Heath Sand formation.

Testing Record

Date	BFPD	W/C	EOPD	BWPD	Remarks
6-2-69	83	12	73	10	Natural
6-10-69	346	14	292	48	Initial Potential
6-28-69	188	22	146	41	
7-1-69	202	35	132	71	
7-8-69	146	34	96	50	Pump Depth 4779' Pumping Fluid Level 4747'

PROPOSAL: Resand frac the Heath with 2,000# 20-40 sand; 4,000# 10-20 sand, 3,000# 10-20 sand and 2,000# 12-20 beads mixed, and 55 gallons scale inhibitor using gelled salt water as sand carrying fluid.

ESTIMATED COST

Pulling Unit, 24 hrs. at \$35.00 per hr.	\$ 850.00
Sand Frac	\$ 4,300.00
Packer and Service	\$ 600.00
Misc. Labor, Trucking and Material	\$ 300.00
TOTAL ESTIMATED COST	\$ 6,550.00

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 2,060.00
Placid Oil Company	33.545035%	\$ 2,197.00
Humble Oil and Refining Company	16.335860%	\$ 1,070.00
Phillips Petroleum Company	16.335860%	\$ 1,070.00
Munoco Company	2.096565%	\$ 137.00
C. F. Lundgren	.230210%	\$ 16.00

APPROVAL OF EXPENDITURE

Requested By:

APPROVED:

M. J. Thornton
 M. J. Thornton

7-10-69
 Date W. J. Thornton

Date

ELJ/sb
 July 10, 1969

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana
(Sand Frac)

HISTORY: Completed Heath Sand May, 1969. Cumulative production through December 31, 1970 21,450 BO 22,274 BW.

PRESENT STATUS: Pumping from the Heath Sand. December 4, 1970 Well Test 8 BOPD 41 BWPD 84% Water Cut. A break even operation.

PROPOSAL: Sand Frac the Heath perforations 4891-99' using Halliburton My-T-Frac treatment method with 2,500# 10-20 sand, 24,000# 8-12 sand and displaced with 19,000 gallons jelled fresh water at 1-4 lbs. sand per gallon.

(Expected production 30-50 BOPD. Payout at 30 BOPD - 5 months.) (Work to be done in March or April.)

ESTIMATED COST

Pulling Unit, 36 Hrs. at \$37.00per hr.	\$ 1,350
Sand Frac	\$ 5,850
Misc. Labor, Trucking, and Material	\$ 400
TOTAL ESTIMATED COST	\$ 7,600

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 2,390
Placid Oil Company	33.545035%	\$ 2,549
Humble Oil and Refining Company	16.335860%	\$ 1,242
Phillips Petroleum Company	16.335860%	\$ 1,242
Munoco Company	2.096565%	\$ 159
C. F. Lundgren	.238210%	\$ 18

APPROVAL OF EXPENDITURE

Requested By:

APPROVED:

M. F. James
M. F. James

1-10-71
Date

Ira Johnson
Date

W. J. Thornton

MTJ/sb
January 12, 1971

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana
(Workover No. 3)

HISTORY: This well completed in the Heath Zone June, 1969. Well was Frac with 4000# sand and 4000# of glass beads, but sanded out with 4000# of sand and 2000# beads out in formation. Put well to pumping with a potential of 346 BFPD 14% BS&W 298 BOPD and 48 BWPD. March, 1971 test .56 BFPD 88% BS&W 7 BOPD 49 BWPD (uneconomical). Accumulated production as of March 1, 1971 is 21,924 BO and 24,762 BW.

PROPOSAL: Acidize with 500 gallons 15% HCL with 110 gallons of Treatolite WF-23 (combination scale and corrosion inhibitor) added and overflushed with 100 bbls. of formation fluid.

JUSTIFICATION: This well has been pulled five (5) times in the past year for tubing leak or pump problem (1 time for tubing - 4 times for pump). On each job the pump was filled with gyp or the pump bbl. corroded into. Pump expenses for the past year have been \$650. The above proposal should last for a period of 3 months and any future inhibitor squeezes would be able to be done at approximately 1/3 this cost (if pressures are low enough) by doing job down the annulus. Production should increase by 25 to 100 BOPD if perforations are gyped up as is indicated. Decline curves for EPU 7 and 15 are enclosed for comparison.

ESTIMATED COST

Pulling 15 Hrs. at \$37.00 per hr.	\$ 550
Acid and Pump Truck	\$ 625
Treatolite WF-23	\$ 275
Packer Rental	\$ 400
Misc. Labor, Material and Trucking	\$ 150
Total Estimated Cost	\$ 2,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 629
Munoco Company	2.096565%	\$ 42
Placid Oil Company	33.545935%	\$ 671
Humble Oil and Refining Company	16.335860%	\$ 327
Phillips Petroleum Company	16.335860%	\$ 327
C. F. Lundgren	.238210%	\$ 4

APPROVAL OF EXPENDITURE

Requested By:

Approved By:

<u>M. T. James</u>					<u>3-29-71</u>	<u>Ira Johnson</u>	<u>4-6-71</u>
Date	BFPD	W/C	BOPD	BWPD	Before	Date	
8-71	51	89	6	45			
9-71	360	87	30	530	After		
	+ 309	- 2	+ 24	+ 185			
					<u>W. J. Thornton</u>	<u>4-6-71</u>	
						Date	

:B/MTJ/sb
 March 29, 1971

DATE JOB COMPLETED 4-21-71
 APPROXIMATE COST \$2,223.00
 BY SB [Signature]

MURPHY OIL CORPORATION
 AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15
 NW NW SECTION 11-T28N-R51E, ROOSEVELT COUNTY, MONTANA

WORKOVER NO. 4

PROPOSAL & JUSTIFICATION

Propose to acidize the Heath perforations (4,891 - 4,899') with 500 gallons of 15% regular acid and squeeze 165 gallons of scale inhibitor and 110 gallons of corrosion inhibitor into the formation and leave shut-in overnight.

This same type of job was performed April 20, 1971, and increased the production from 6 BOPD and 45 BWPD (89% BS&W) to 30 BOPD and 230 BWPD (87% BS&W). The well was treated again in October, 1971, with 110 gallons of acid and 110 gallons of scale and corrosion inhibitor because test run on the scale and corrosion inhibitor returns were low. Production did not increase but protection of the pump was increased. This job can be done down the annulus. Latest well test: 10 BOPD and 181 BWPD (95% water-cut).

Expected payout with an increase of 20 BOPD: 20 BOPD X \$2.06/bbl. = \$41.20/day;
 \$1,575 estimated cost ÷ \$41.20 = 39 days.

ESTIMATED COST

500 gallons of 15% acid	\$ 225
Pump Truck	250
Scale and Corrosion Inhibitor	850
Miscellaneous Labor, Material and Trucking	<u>250</u>
TOTAL ESTIMATED COST	\$ 1,575

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 495
Placid Oil Company	33.545035%	529
Humble Oil and Refining Company	16.335860%	257
Phillips Petroleum Company	16.335860%	257
Munoco Company	2.096565%	33
C. F. Lundgren	.238210%	4

APPROVAL OF EXPENDITURE

Requested:

APPROVED:

W. G. BROWN

2-24-72

Date

Chris D. Johnson 3/2/72

Date

WGB/sb/cm
 2-29-72

Date Job Completed - 3-13-72
Approximate Cost \$1725.00
By <i>BB [Signature]</i>

F.k

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana
(Workover No. 5)

Proposal and Justification: It is proposed to squeeze the Heath formation and reopen the B-1 & 2 Zones and pump test.

East Poplar Unit No. 15 is pumping from the Heath formation at the rate of 238 BFPD 5 BOPD 233 BWPD 98% BS&W (May, 1972 test) which is uneconomical. The pumping fluid level shows 200' of fluid over the pump. A Wasp bridge plug and 1 sack of cement was set at 4992' leaving the B-1 & 2 perforations open. The last B-Zone test was May, 1969 showing 319 BFPD 19 BOPD 300 BWPD 94% BS&W. Three acid jobs and inhibitor squeezes (scale and corrosion) have been tried on the Heath to increase production with the last two failing. The A Zone is a potential pay in the event the B-1 & 2 fail to prove economical. B-Zone production should be as good as the last test shows or 20 BOPD. Payout at 20 BOPD would be 261 days using \$1.36 per bbl. net.

ESTIMATED COST

Pulling Unit, 70 hrs. at \$40/hr.	\$ 2,800
Packer and Manifold Rental	1,000
Cement and Services	1,500
Drilling Equipment Rental	750
500 Gallon Acid Job, if needed	500
Misc. Labor, Material and Supervision	500
TOTAL ESTIMATED COST	\$ 7,050

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 2,217
Placid Oil Company	33.545035%	2,365
Humble Oil and Refining Company	16.335860%	1,152
Phillips Petroleum Company	16.335860%	1,152
Munoco Company	2.096565%	148
C. F. Lundgren	.238210%	16

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. G. Brown

Date

A. W. Simpson

Date

This workover went much better than anticipated thereby resulting in spending less money than planned. The big saving was in the pulling unit time because of cement and bridge plug drilling better than planned. Roustabout crews were used to do a lot of the hookup that the pulling unit crews normally did.

A bridge plug was not used that had been planned on which resulted in a savings of \$464 WGB/sb. The acid job was not required on June 14, 1972 this job as had been planned.

At this time the well is pumping 400 BFPD 8 BOPD 392 BWPD 98% BS&W. This is getting better and should be at the 20 BOPD rate in about 10 days as more of the formation water is unloaded.

Date Completed 7-26-72
Approx. Cost 5606.00

See Brown - 8/15/72
have record approved
No Copies of these, let me know
A.F.E. No. 2-1514-10
Supplement No. 1 *B. L. L.*

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15
NW NW SECTION 11-T28N-R51E, ROOSEVELT COUNTY, MONTANA

WORKOVER NO. 5

SUPPLEMENT JUSTIFICATION

This supplement is necessitated by less expense than anticipated on the original Authority for Expenditure.

The major area of savings was in pulling unit time because drilling of cement and bridge plug took less time than anticipated. Also one less bridge plug was used, a planned acid job was not required and roustabout crews were used at a lesser cost to do some of the work usually performed by the pulling unit crews.

ESTIMATED COST

Original Authority for Expenditure	\$ 7,050
Revised Estimated Cost	<u>5,600</u>
Supplement No. 1 Credit	\$(1,450)

APPROVAL OF SUPPLEMENTAL CREDIT

Murphy Oil Corporation	31.448470%	\$ (457)
Placid Oil Company	33.545035%	(486)
Humble Oil & Refining Company	16.335860%	(237)
Phillips Petroleum Company	16.335860%	(237)
Munoco Company	2.096565%	(30)
C. F. Lundgren	.238210%	(3)

APPROVAL OF SUPPLEMENT

Requested:

APPROVED:

W. G. BROWN

8-7-72

Date

Allen Dr. Langer *8/15/72*
Date

Date Completed 7-26-72

Approximate Cost - \$5,606 (1,450)

Work Performed By - L. C. Loegering

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana
(Change Out Tubing)

PROPOSAL & JUSTIFICATION: It is proposed to change out the bottom 1000' of 2-7/8" tubing.

This well has had 3 tubing leaks in the bottom 1000' of tubing in the past year. In an effort to curb the leak frequency this tubing should be changed on the next leak. Pay out of this change out would be approximately 2 tubing leaks not counting any lost production. This well is producing at the rate of 321 BFPD 17 BOPD 304.BWPD 95% BS&W.

ESTIMATED COST

Pulling Unit	\$ 900
1000' of Cond. 2 2-7/8" Tubing	\$ 1,750
1000' of Cond. 4 2-7/8" Tubing	(\$ 1,000)
Pump and Anchor Repair	\$ 1,000
Misc. Labor, Material and Trucking	\$ 250
Total Estimated Cost	\$ 2,900

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 912
Placid Oil Company	33.545035%	\$ 973
Exxon Company, U.S.A.	16.335860%	\$ 474
Phillips Petroleum Company	16.335860%	\$ 474
Munoco Company	2.096565%	\$ 60
C. F. Lundgren	2.238210%	\$ 7

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. G. Brown

1-8-75
Date

A. W. Simpson

1-15-75
Date

This job was completed as planned, the total estimated cost was approximately \$1000 - less, than the actual cost, due to re-running the top anchor + the small cost of the pump repair. JCB

WGB/sb
January 8, 1975

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15
NW NW Section 11, T29N, R51E, Roosevelt County, Montana
(Replace Flowline)

Due to continued leaks in this flowline which lays 100% across cultivated farmland - it is proposed to replace 2650' of 3" steel line with 2" fiberglass line. The landowner has given permission to re-lay the line in road ditch instead of across farmland. The line would lay east from East Poplar Unit No. 15 and tie into existing 5-1/2" total fluid line which runs from "H" Battery to the South Central "D" Battery.

ESTIMATED COST

2650' of 2" Fiberglass Pipe, Glue Kits and Connections	\$ 3,000
Labor to Ditch, Lay and Cover	\$ 2,400
Misc. Labor, Material and Supervision	\$ 500
Total Estimated Cost	\$ 5,900

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 1,855
Placid Oil Company	33.545035%	\$ 1,979
Phillips Petroleum Company	16.335860%	\$ 964
Exxon Company, U.S.A.	16.335860%	\$ 965
Munoco Company	2.096565%	\$ 124
C. F. Lundgren	.238210%	\$ 14

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Billy G. Melear
 Billy G. Melear

9-28-78
 Date

A. H. Simpson
 A. H. Simpson

10/5/78
 Date

5815

(500)

BGM/eb
 September 28, 1978

A.F.E. No. 8-1533-10

MURPHY OIL CORPORATION
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana

PROPOSAL & JUSTIFICATION: One of the wrist pins broke on the American 160 unit, breaking the pitman arm, the opposite wrist pin, and damaging the saddle bearing base.

It is proposed to repair the unit. The last test on this well was 10 BOD and 197 BWD on 11-1-78.

ESTIMATED COST

Two Wrist Pins	\$ 1,000
Machine work on Pitman Arm and Saddle Bearing	\$ 500
Roustabout Crew	\$ 650
Trucking	\$ 300
Freight	\$ 50
Total Estimated Cost	\$ 2,500

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 786
Placid Oil Company	33.545035%	\$ 839
Exxon Company, U.S.A.	16.335860%	\$ 408
Phillips Petroleum Company	16.335860%	\$ 408
Munoco Company	2.096565%	\$ 53
C. F. Lundgren	.238210%	\$ 6

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Billy C. Melear
 Billy C. Melear

11-15-78
 Date

A. W. Simpson 11/22/78
 A. W. Simpson Date

(506)
 BGM/sb
 November 15, 1978

put 2445
2082/120

A.F.E. NO. 5-1501-10

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15
NW NW SECTION 11, T28N, R51E, ROOSEVELT COUNTY, MONTANA

PROPOSAL & JUSTIFICATION:

The tubing anchor is stuck in the hole on EPU No. 15 and it has developed a hole in the tubing. It is proposed to back off the tubing and jar the anchor out of the hole.

ESTIMATED COST

Rig -----	\$ 7,000
Fishing Tools and Jars -----	6,500
Hydro-tester -----	1,300
Wire Line Truck -----	4,500
Supervision and Miscellaneous -----	<u>1,700</u>
Total Estimated Costs	\$ 21,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil USA, Inc.	31.448470%	\$ 6,604
Petro-Lewis Corporation	33.545035%	7,044
Exxon Company USA	16.335860%	3,431
Phillips Petroleum Company	16.335860%	3,431
Munoco Company	2.096565%	440
C. F. Lundgren	.238310%	50

APPROVAL OF EXPENDITURE

Requested by:

Raymond Reede
Raymond Reede

1-15-85
Date

Approved by:

A. W. Simpson
A. W. Simpson

1/23/85
Date

RR/jh
January 15, 1985

506

DATE JOB COMPLETED	_____
APPROXIMATE COST	_____
BY	_____

CASH EXPENDITURE
QUARTER

FIRST	SECOND	THIRD	FOURTH	FIFTH
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REC. PROD. APR 29 1985 A.F.E. NO. 5-1501-10-S1

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE - EAST POPLAR UNIT NO. 15
NW NW SECTION 11, T28N, R51E, ROOSEVELT COUNTY, MONTANA
EAST POPLAR FIELD

This A.F.E. was underspent because the fishing tools and the wire line truck were less than anticipated.

ESTIMATED SUPPLEMENTAL COSTS

	<u>Original</u>	<u>Actual</u>	<u>Supplement #1</u>
Rig	\$ 7,000	\$ 6,880	\$ (120)
Fishing Tools	6,500	5,691	(809)
Hydro-Tester	1,300	941	(386)
Wire Line Truck	4,500	3,313	(1,187)
Supervision & Misc.	1,700	-0-	(1,700)
Total Cost	\$21,000	\$16,798	\$ 4,202

APPORTIONMENT OF SUPPLEMENTAL COSTS

Murphy Oil USA, Inc.	31.448470%	\$ 6,604	\$ 5,283	\$ 1,321
Fairway Resources, Inc.	29.351906%	6,164	4,931	1,233
Phillips Petroleum Co.	16.335860%	3,431	2,744	687
Exxon Company USA	16.335860%	3,431	2,744	687
TPEX Exploration, Inc.	4.193129%	880	704	176
Munoco Company	2.096565%	440	352	88
C. F. Lundgren	.238210%	50	40	10

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Raymond Reede
Raymond Reede

4-25-85
Date

A. W. Simpson
A. W. Simpson

4/29/85
Date

RR/jh
April 25, 1985

DATE JOB COMPLETED _____
APPROXIMATE COST _____
BY _____

50C

CASH EXPENDITURE

QUARTER

FIRST	SECOND	THIRD	FOURTH	FUTURE FUNDS
	✓			

AUTHORITY FOR EXPENDITURE
MURPHY OIL CORPORATION - EAST POPLAR UNIT NO. 15
NW NW Section 11, T28N, R51E, Roosevelt County, Montana
(Workover No. 4)

Proposal and Justification: It is proposed to acidize the Heath perforations, 4891-4899', with 500 gallons of 15% regular acid and squeeze 165 gallons of scale inhibitor and 110 gallons of corrosion inhibitor into the formation and leave shut in overnight.

This same type of job was performed April 20, 1971 and increased the production from 51 BFPD 6 BOPD 45 BWPD 89% BS&W to 260 BFPD 30 BOPD 230 BWPD 87% BS&W. The well was treated again in October of 1971 with 110 gallons of acid and 110 gallons of scale and corrosion inhibitor because test ran on the scale and corrosion inhibitor returns were low. Production did not increase but protection of the pump did. This job can be done down the annulus. Latest well test 191 BFPD 10 BOPD 181 BWPD 95% W.C..

Expected payout with an increase of 20 BOPD - 20 BOPD X \$2.06/bbl. - \$41.20/day
 \$1575 ÷ \$41.20 = 39 day payout.

ESTIMATED COST

500 Gallons of 15% Acid	\$ 225
Pump Truck	\$ 250
Scale and Corrosion Inhibitor	\$ 850
Misc. Labor Material and Trucking	\$ 250
Total Estimated Cost	\$ 1,575

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil Corporation	31.448470%	\$ 495
Munoco Company	2.096565%	\$ 529
Placid Oil Company	33.545935%	\$ 257
Humble Oil and Refining Company	16.335860%	\$ 257
Phillips Petroleum Company	16.335860%	\$ 33
C. F. Lundgren	.238210%	\$ 7

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

W. G. Brown

Date

A. W. Simpson

Date

WGB/sb

February 24, 1972

EPU #15

Dist. 4/28/92

A.F.E. No. 2-0410-010

MURPHY OIL USA, INC.
AUTHORITY FOR EXPENDITURE
EAST POPLAR UNIT NO. 15
NW NW SECTION 11, T28N, R51E
ROOSEVELT COUNTY, MONTANA

REPAIR WELL

PROPOSAL & JUSTIFICATION:

This well developed a tubing leak. A service rig was moved on to the well to pull the rods and tubing. The tubing was stuck in the hole. The tubing was cut off at 4829'. Jars and drill collars and a fishing tool were run in the hole, but couldn't jar loose. Tried to mill over fish but it acted like we were milling on the casing. Put well back on production.

ESTIMATED COST

Rig -----	\$ 8,000
Wire Line -----	2,500
Rental Tools -----	6,600
Tubing Testers -----	900
Supervision & Miscellaneous -----	1,000
TOTAL ESTIMATED COST	\$18,000

APPORTIONMENT OF TOTAL ESTIMATED COST

Murphy Oil USA, Inc.	60.363718%	\$10,865
Doil Oil & Gas	20.965647%	3,774
Exxon Company U.S.A.	16.335860%	2,941
Munoco Company	2.096565%	377
C.F. Lundgren	.238201%	43

APPROVAL OF EXPENDITURE

Requested by:

Approved by:

Raymond Reede 4-15-92
Raymond Reede Date

Sidney W. Campbell 4-22-92
Sidney Campbell Date

Paul E. Ramsey 4-26-92
Paul Ramsey Date

RR/jh
April 15, 1992

DATE JOB COMPLETED	_____
APPROXIMATE COST	_____
BY	_____

ORIGINAL FOR FIELD
(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Billings
Lease No. Fee Land-Reynolds
Unit East Poplar

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	SUBSEQUENT REPORT OF WATER SHUT-OFF
NOTICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING
NOTICE OF INTENTION TO TEST WATER SHUT-OFF	SUBSEQUENT REPORT OF ALTERING CASING
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL	SUBSEQUENT REPORT OF REDRILLING OR REPAIR
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	SUBSEQUENT REPORT OF ABANDONMENT
NOTICE OF INTENTION TO PULL OR ALTER CASING	SUPPLEMENTARY WELL HISTORY
NOTICE OF INTENTION TO ABANDON WELL	

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Well No. 15 is located 660 ft. from N line and 660 ft. from W line of sec. 11
C NW/4 NW/4 Sec. 11 28N 51E
(1/4 Sec. and Sec. No.) (Twp.) (Range) (Meridian)
East Poplar Roosevelt Montana
(Field) (County or Subdivision) (State or Territory)

The elevation of the ~~water~~ ^{ground} surface above sea level is 2104 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudlogging jobs, cementing points, and all other important proposed work)

5817 feet. Acidized B Zones, 5636 to 5644 and 5654 to 5664, with 1000 gallons Dowell, 15% Regular acid. Maximum pressure 2350#. Minimum pressure 2250#. Displaced 4 barrels acid per minute. Final pressure after pumping: 1474#. Flowed acid to surface in 24 minutes; oil to surface in 34 minutes. Cleaned to pit. 1/4" choke, TFP: 250# TSIP: 600# CSIP: 800# BS&W: 2%

Acidized C Zone, 5800 to 5817, with 1000 gallons Dowell, 15% Regular acid. Maximum pressure 2800#. Displaced 3.5 barrels at 2800#. Final pressure after pumping: 1600#. Flowed acid to surface in 137 minutes. Well died after 167 minutes. Made 3 small heads in 8 hours.

2-17-53

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation
Address Box 76
Poplar, Montana
By Harold Wilson
Title District Production Supt.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN THE
(Other instru-
verse side)

Form approved.
Budget Bureau No. 42-R1424.
5. LEASE DESIGNATION AND SERIAL NO.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL ☒ GAS WELL ☐ OTHER ☐
2. NAME OF OPERATOR
Murphy Oil Corporation
3. ADDRESS OF OPERATOR

P.O. Box 547, Poplar, Montana

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.
See also space 17 below.)
At surface

660' from the North line and 660' from the West line

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, OR, etc.)

2104' G.L.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Fort Rock
7. UNIT AGREEMENT NAME
East Poplar Unit
8. FARM OR LEASE NAME
East Poplar Unit
9. WELL NO.
No. 15
10. FIELD AND POOL, OR WILDCAT
East Poplar Unit
11. SEC., T., S., M., OR BLK. AND SURVEY OR AREA
NW NW Section 11, T28N. R51E
12. COUNTY OR PARISH
Roosevelt
13. STATE
Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

Zone Change

XX

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

PRESENT STATUS: Pumping from the B-1 & 2 Zone. Well Test 4-7-69 324 BFPD 94%
Water Cut 19 BOPD 305 BFPD.

PROPOSAL: Run Cement Bond, Neutron and Collar Logs. Set drillable bridge plug with one sack of cement on top (block squeeze if needed). Perforate the Heath Sand porosity 4891-99' (8') 1 hole per foot. Swab test. Acidize with 500 gallons (if needed) to clean up and Sand Frac with 10,000# 20-40 Sand and 5,000# 12-20 Beads. Production Test.

18. I hereby certify that the foregoing is true and correct.

SIGNED **ORIGINAL SIGNED BY M. T. JAMES**

TITLE **District Superintendent**

DATE **May 22, 1969**

(This space for Federal or State office use)

APPROVED BY
CONDITIONS OF APPROVAL, IF ANY:

TITLE

ACTING DISTRICT ENGINEER

DATE

MAY 23 1969

MURPHY
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Fort Peck

7. UNIT AGREEMENT NAME

East Poplar Unit

8. FARM OR LEASE NAME

East Poplar Unit

9. WELL NO.

No. 15

10. FIELD AND POOL, OR WILDCAT

East Poplar Unit

11. SEC., T., R., M., OR BLM. AND

SURVEY OR AREA

NW NW Section 11,

T28N, R51E

12. COUNTY OR PARISH

Roosevelt

13. STATE

Montana

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT" for such proposals.)

1. OIL WELL ☒ GAS WELL ☐ OTHER ☐

2. NAME OF OPERATOR

Murphy Oil Corporation

3. ADDRESS OF OPERATOR

P.O. Box 547, Poplar, Montana

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*

See also space 17 below.)
At surface

660' from the North line and 660' from the West line

14. PERMIT NO.

15. ELEVATIONS (Show whether DP, RT, GR, etc.)

2104' G.L.

16.

Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

Zone Change

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(NOTE: Report Results of Multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

PRESENT STATUS: Pumping from the B-1 & 2 Zone. Well Test 4-7-69 324 BFPD 94%
Water Cut 19 BOPD 305 BWPD.

PROPOSAL: Run Cement Bond, Neutron and Collar Logs. Set drillable bridge plug with one sack of cement on top (block squeeze if needed). Perforate the Heath Sand porosity 4891-99' (8') 1 hole per foot. Swab test. Acidize with 500 gallons (if needed) to clean up and Sand Frac with 10,000# 20-40 Sand and 5,000# 12-20 Beads. Production Test.

18. I hereby certify that the foregoing is true and correct.

SIGNED ORIGINAL SIGNED BY M. T. JAMES

TITLE District Superintendent

DATE May 22, 1969

(This space for Federal or State office use)

APPROVED BY ACTING DISTRICT ENGINEER
CONDITIONS OF APPROVAL, IF ANY:

TITLE ACTING DISTRICT ENGINEER

DATE

MAY 23 1969

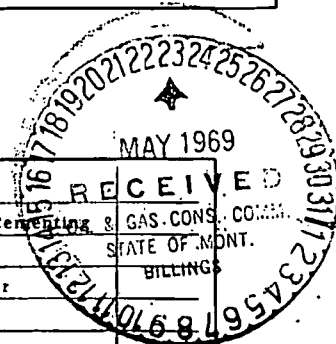
(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.



Notice of Intention to Drill		Subsequent Report of Water Shut-off
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment
Notice of Intention to Pull or Alter Casing		Supplementary Well History
Notice of Intention to Abandon Well		Report of Fracturing
Zone Change	XX	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

May 22, 1969

Following is a ~~notice of intention to do work~~ on land ~~leased~~ described as follows:

LEASE **East Poplar Unit No. 15**

MONTANA (State) **Roosevelt** (County) **East Poplar Unit** (Field)

Well No. **15** **NW NW Section 11** **T28N** **R51E** **NPM**
(m. sec.) (Township) (Range) (Meridian)

The well is located **660** ft. from **N** line and **660** ft. from **XX** line of Sec. **11**

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is **2104' G.L.**

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths, of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

PRESENT STATUS: Pumping from the B-1 & 2 Zone. Well Test 4-7-69 324 BOPD 94%
Water Cut 19 BOPD 305 BWPD.

PROPOSAL: Run Cement Bond, Neutron and Collar Logs. Set drillable bridge plug with one sack of cement on top (block squeeze if needed). Perforate the Heath Sand porosity 4891-99' (8') 1 hole per foot. Swab test. Acidize with 500 gallons (if needed) to clean up and Sand Frac with 10,000# 20-40 Sand and 5,000# 12-20 Beads. Production Test.

Approved subject to conditions on reverse of form

Date **MAY 23 1969**

ORIGINAL SIGNED BY:

By **J. R. Hug, Supervisor**
District Office Agent Title

Company **MURPHY OIL CORPORATION**

By **ORIGINAL SIGNED BY M. T. JAMES**

Title **District Superintendent**

Address **P.O. Box 547, Poplar, Montana 59255**

COMMISSION USE ONLY		
API WELL NUMBER		
2	5	
STATE	COUNTY	WELL

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate
WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

3 REPORTER PRtg. & SUPPLY CO.

**UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Fort Peck

7. UNIT AGREEMENT NAME

East Poplar Unit

8. FARM OR LEASE NAME

East Poplar Unit

9. WELL NO.

No. 15

10. FIELD AND POOL, OR WILDCAT

East Poplar Unit

11. SEC. T., R., M., OR BLK. AND
SURVEY OR AREA

NW NW Section 11,

T28N R51E

12. COUNTY OR PARISH 13. STATE

Roosevelt Montana

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT" for such proposals.)

1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>	RECEIVED
2. NAME OF OPERATOR Murphy Oil Corporation	JUN 11 1969
3. ADDRESS OF OPERATOR P.O. Box 547, Poplar, Montana 59255	59255 Sinc, Montana
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface 660' from the North line and 660' from the West line	
14. PERMIT NO.	15. ELEVATIONS (Show whether DP, RT, GR, etc.) 2104' G.L.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF ☐

FRACTURE TREAT ☐

SHOOT OR ACIDIZE ☐

REPAIR WELL ☐

(Other) ☐

PULL OR ALTER CASING ☐

MULTIPLE COMPLETE ☐

ABANDON* ☐

CHANGE PLANS ☐

(Other) ☐

SUBSEQUENT REPORT OF

WATER SHUT-OFF ☐

FRACTURE TREATMENT ☐

SHOOTING OR ACIDIZING ☐

(Other) **Zone Change** ☒

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

REPAIRING WELL ☐

ALTERING CASING ☐

ABANDONMENT* ☐

(Other) ☐

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Ran WASP Bridge Plug on wireline. Set top of plug at 5000'. Dumped 1 sack of cement on top of bridge plug. New PBTD 4992'. Installed BOP, filled 5-1/2" casing with salt water and tested casing and bridge plug to 1500#, Held OK. Perforated the Heath Sand Formation from 4891'-4899' with Wireline Sabre Jet Gun and 50 gram jets at 1 hole per foot. Set retrievable packer at 4846', tail pipe at 4877'. Sand frac Heath Sand Perforations 4891' to 4899' as follows:

Broke formation with 30 bbls. oil at 4200# at 9-1/2 BPM.

2000# 20-40 Sand at 1/2# per gallon	4100#	10 BPM
2000# 20-40 Sand at 3/4# per gallon	4050#	10 BPM
4000# 10-20 Sand and 12-20 Beads at 1# per gallon	4000#	10 BPM

Well sanded out with 4000# 20-40 sand, 2000# 10-20 sand and 2000# 12-20 beads out into formation.

Broke circulation and displaced hole with salt water. Reversed sand out of hole. Washed down 3 joints of tubing to clean hole.

Initial Potential: 4 Hr. Test Pumped 57.68 BF 14% W.C. = 346 BFPD 298 BOPD 48 BWPD.

18. I hereby certify that the foregoing is true and correct

SIGNED

MICHAEL F. REITZ

TITLE **District Superintendent**

DATE **June 10, 1969**

(This space for Federal or State office use)

APPROVED BY (ORIG. SGD.) **MICHAEL F. REITZ**
CONDITIONS OF APPROVAL, IF ANY:

TITLE **ACTING DISTRICT ENGINEER**

DATE **JUN 16 1969**

*See Instructions on Reverse Side

ORIGINAL FORWARDED TO CASPER

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Zone Change	

(Indicate Above, by Check Mark Nature of Report, Notice, or Other Data)

June 10, 1969

Following is a ~~report of work done~~ on land ~~leased~~ described as follows:

LEASE East Poplar Unit No. 15

MONTANA
(State)Roosevelt
(County)East Poplar Unit
(Field)Well No. 15 NW NW Section 11 T28N R51E NPM
(m. sec.) (Township) (Range) (Meridian)

The well is located 1980 ft. from N line and 1980 ft. from W line of Sec. 11

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2104' G.L.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See Attached Sheet



Approved subject to conditions on reverse of form

Date JUN 26 1969

ORIGINAL SIGNED BY

By Judson D. Sweet, Petroleum Engineer
District Office Agent

Title

Company MURPHY OIL CORPORATION

By

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

COMMISSION USE ONLY
API WELL NUMBER

STATE	COUNTY	WELL
25		

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

3 REPORTER PRtg. & SUPPLY CO.

Ran WASP Bridge Plug on wireline. Set top of plug at 5000'. Dumped 1 sack of cement on top of bridge plug. Now PBTD 4992'. Installed BOP, filled 5-1/2" casing with salt water and tested casing and bridge plug to 1500#, held OK. Perforated the Heath Sand Formation from 4891-4899' with Wireline Sabre Jet Gun and 50 gram jets at 1 hole per foot. Set retrievable packer at 4846', tail pipe at 4877'. Sand Frac Heath Sand Perforations 4891' to 4899' as follows:

Broke formation with 30 bbls. oil at 4200# at 9-1/2 BPM

2000# 20-40 Sand at 1/2# per gallon	4100#	10 BPM
2000# 20-40 Sand at 3/4# per gallon	4050#	10 BPM
4000# 10-20 Sand and 12-20 Beads at 1# per gal.	4000#	10 BPM

Well sanding out with 4000# 20-40 sand, 2000# 10-20 sand and 2000# 12-20 beads out into formation.

Broke circulation and displaced hole with salt water. Reversed sand out of hole. Washed down 3 joints of tubing to clean hole.

Initial Potential: 4 Hr. Test Pumped 57.68 BF 14% W.C. - 346 BFPD 298 BOPD 48 BWPD.

Approved

Date

By

COMM
APP

(SUBMIT IN QUADRUPLICATE)
TO

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	<input checked="" type="checkbox"/>	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

April 21, 1971

Following is a notice of intention to do work on land leased described as follows:

LEASE East Poplar Unit No. 13

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 13 NW NW Section 11 T28N R51E N7M
(m. sec.) (Township) (Range) (Meridian)

The well is located 660 ft. from 1900 ft. from line and 1900 ft. from line of Sec. 11

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 3104' G.L.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

To treat Heath Sand by acidizing for Gyp and corrosion.

Last Test - April 8, 1971 31 NW79 891 W.C. 45 NWD 6 NWD



Approved subject to conditions on reverse of form

Date APR 22 1971

ORIGINAL SIGNED BY:

By J. R. Hug, Supervisor

District Office Agent

Title

Company Murphy Oil Corporation

By ORIGINAL SIGNED BY T. T. TATE

District Superintendent

Title

Address P.O. Box 347, Poplar, Montana 59233

COMMISSION USE ONLY									
API WELL NUMBER									
2	5								
STATE		COUNTY				WELL			

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate
WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER



LES

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

NOTICE
THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Acidizing Acidizing, XXXXXX	XX
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

May 4

71

Following is a ~~notice of intention to drill~~ report of work done on land ~~XXXXX~~ leased described as follows:

LEASE **East Poplar Unit No. 13**MONTANA
(State)**Roosevelt**

(County)

East Poplar Unit

(Field)

Well No. **13** **NE 1/4 Section 11** **T26N** **R51E** **NPM**
(m. sec.) (Township) (Range) (Meridian)

The well is located **1980** ft. from **1/4** N line and **1980** ft. from **1/4** E line of Sec. **11**

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is **2104' C.L.**

READ CAREFULLY

DETAILS OF PLAN OF WORK

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK

Heath Sand perforations 4891-99' were acidized with 500 gallons 15% regular acid with 4 gallons of inhibitor and 2 gallons emulsion breaker added. The acid was followed with 110 gallons WF-23 Tractolite (corrosion and scale inhibitor) mixed with formation water. Overflushed chemical with 125 bbls. of formation fluid.

Formation broke at 1600 PSI at 2 BPM. Max. inj. rate 4 BPM. Min. inj. rate 1-1/2 BPM Average 3-1/2 BPM.

Production was increased from 6 BOPD to 30 BOPD.

Workover Potential: 260 BOPD 87% W.C. 30 BOPD 230 BWPD

Approved subject to conditions on reverse of form

Date

By District Office Agent Title

MURPHY OIL CORPORATION

Company

By **District Superintendent**

Title

Address **P.O. Box 347, Poplar, Montana 59255**COMMISSION USE ONLY
API WELL NUMBER

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

3 REPORTER PRG. 8 SUPPLY CO.

COMMISSION USE ONLY API WELL NUMBER									
2	5								
STATE		COUNTY				WELL			

(SUBMIT IN QUADRUPPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

NOTICE

THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	X	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

March 13, 1972

Following is a ~~notice of intention to do work~~ on land ~~leased~~ described as follows:LEASE East Poplar UnitMONTANA
(State)Roosevelt
(County)East Poplar Unit
(Field)Well No. 15 NW NW Section 11 28N 51E MPM
(m. sec.) (Township) (Range) (Meridian)The well is located 1980 ft. from N line and 1980 ft. from W line of Sec. 11

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2104' S.L.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT**East Poplar Unit No. 15 is producing from the Heath Sand with perforations at 4891-4899'. Latest Test: 191 BWPD 10 BOPD 181 BWPD 95% W.C.****East Poplar Unit No. 15 is to be acidized with 500 gallons of 15% regular acid and 165 gallons of scale inhibitor and 110 gallons of corrosion inhibitor is to be squeezed into the formation. Well is to be left shut in overnight. Expect to increase production 20 BOPD.**

Approved subject to conditions on reverse of form.

MAR 16 1972

ate ORIGINAL SIGNED BY:

J. R. Hug, Supervisor

District Office Agent

Title

Company MURPHY OIL CORPORATIONBy ORIGINAL SIGNED BY W. G. PROWYTitle District SuperintendentAddress P.O. Box 547, Poplar, Montana 59255COMMISSION USE ONLY
API WELL NUMBER

COUNTY	WELL

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

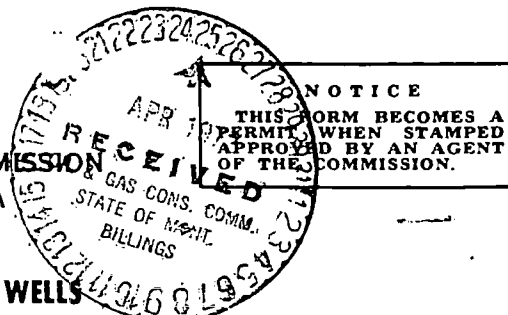


(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS



Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	X
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

April 20, 1972

Following is a ~~report of work done~~ on land ~~leased~~ described as follows:LEASE East Poplar UnitMONTANA
(State)Beauregard
(County)East Poplar Unit
(Field)Well No. 15 NW NW Section 11 T22N R51E 10W
(m. sec.) (Township) (Range) (Meridian)The well is located 1900 ft. from N line and 1900 ft. from W line of Sec. 11

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2104' G.L.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See Attached Sheets

Approved subject to conditions on reverse of form

Date APR 25 1972
ORIGINAL SIGNED BY:By J. R. Hug, Supervisor
District Office Agent TitleCompany MURPHY OIL CORPORATIONBy ORIGINAL SIGNED BY W. G. BROWNTitle District SuperintendentAddress P.O. Box 147, Poplar, Montana 592COMMISSION USE ONLY
API WELL NUMBER

STATE	COUNTY	WELL
25		

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER



Acidized the Heath Sand formation 4891-4893' with 500 gallons 15% acid (with inhibitor and non-emulsifier) plus 110 gallons 990 and 165 gallons 957 VISCO corrosion and scale inhibitor down the annulus as follows.

Pressured tubing to 600 PSI with down hole pump. Injected 110 gallons 990 VISCO (corrosion inhibitor) mixed with 10 bbls. Heath crude down annulus followed by 77 bbls. salt water.

Injected 500 gallons 15% acid down annulus followed by 165 gallons 957 (scale inhibitor) mixed with 110 bbls. salt water. Displaced treated water with 127 bbls. formation fluid (77 bbls. casing volume plus 50 bbls. over displacement). Shut in 24 hrs.

Max. Inj. Pressure	1400 PSI
Max. Inj. Rate	1- $\frac{1}{2}$ BPM
15 Min. S.I.	1150 PSI
2 Hr. S.I.	200 PSI
20 Hr. S.I.	Casing on Vacuum

Note: Caught pressure with 77 bbls. in tubing. Pressure decreased to 50 PSI while filling annulus, due to temperature of fluid being pumped. Tubing pressure increased to 1400 PSI and remained the same while displacing.

Well potentialized at 266 BFPD 13 BOPD 253 BWPD 95% W.C. 4-9-72

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE*
(Other instructions on re-verse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

OIL WELL ☒ GAS WELL ☐ OTHER ☐

2. NAME OF OPERATOR

Murphy Oil Corporation

3. ADDRESS OF OPERATOR

P.O. Box 547, Poplar, Montana 59255

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*
See also space 17 below.)
At surface

660' from the North line and 660' from the West line

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

2104'

Fort Peck

7. UNIT AGREEMENT NAME

East Poplar Unit

8. FARM OR LEASE NAME

East Poplar Unit

9. WELL NO.

No. 15

10. FIELD AND POOL, OR WILDCAT

East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

NW NW Section 11,
T28N, R51E.

12. COUNTY OR PARISH 13. STATE

Roosevelt

Montana

10. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other) Sqz & Reperf.

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

East Poplar Unit No. 15 is pumping from the Heath formation at the rate of 238 BFPD 5 BOPD 233 BFPD 98% BS&W (May, 1972 test) which is uneconomical. The pumping fluid level shows 200' of fluid over the pump. A WASP bridge plug and 1 sack of cement was set at 4992' leaving the B-1 & 2 perforations open. The last B-Zone test was May, 1969 showing 319 BFPD 19 BOPD 200 BFPD 94% BS&W. Three acid jobs and inhibitor squeezes (scale and corrosion) have been tried on the Heath to increase production with the least two failing. It is proposed to squeeze the Heath formation and reopen the B-1 & 2 Zones and pump test.

18. I hereby certify that the foregoing is true and correct.

SIGNED ORIGINAL SIGNED BY W. C. BROWN

TITLE District Superintendent

DATE July 24, 1972

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE Jul 26 1972

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

TO CASPER

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEYSUBMIT IN TRIPL
(Other instructions
reverse side)Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>	5. LEASE DESIGNATION AND SERIAL NO.
2. NAME OF OPERATOR Murphy Oil Corporation	6. IF INDIAN, ALLOTTEE OR TRIBE NAME Fort Peck
3. ADDRESS OF OPERATOR P.O. Box 547, Poplar, Montana 59255	7. UNIT AGREEMENT NAME East Poplar Unit
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface 660' from the North line and 660' from the West line	8. FARM OR LEASE NAME East Poplar Unit
14. PERMIT NO.	9. WELL NO. No. 15
15. ELEVATIONS (Show whether DF, RT, GR, etc.) 2104'	10. FIELD AND POOL, OR WILDCAT East Poplar Unit
	11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA NW NW Section 11, T28N, R51E,
	12. COUNTY OR PARISH Roosevelt
	13. STATE Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF ☐FRACTURE TREAT ☐SHOOT OR ACIDIZE ☐REPAIR WELL ☐(Other) **Sqs & Reperf.**PULL OR ALTER CASING ☐MULTIPLE COMPLETE ☐ABANDON* ☐CHANGE PLANS ☒

SUBSEQUENT REPORT OF:

WATER SHUT-OFF ☐FRACTURE TREATMENT ☐SHOOTING OR ACIDIZING ☐(Other) ☐REPAIRING WELL ☐ALTERING CASING ☐ABANDONMENT* ☐

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

East Poplar Unit No. 15 is pumping from the Heath formation at the rate of 238 BFPD 5 BOPD 233 BFPD 98% BS&W (May, 1972 test) which is uneconomical. The pumping fluid level shows 200' of fluid over the pump. A WASP bridge plug and 1 sack of cement was set at 4992' leaving the B-1 & 2 perforations open. The last B-Zone test was May, 1969 showing 319 BFPD 19 BOPD 300 BFPD 94% BS&W. Three acid jobs and inhibitor squeezes (scale and corrosion) have been tried on the Heath to increase production with the least two failing. It is proposed to squeeze the Heath formation and reopen the B-1 & 2 Zones and pump test.

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY W. G. BROWNTITLE District SuperintendentDATE July 24, 1972

(This space for Federal or State office use)

APPROVED BY [Signature]
CONDITIONS OF APPROVAL, IF ANY:TITLE [Signature]DATE 7-26-72

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

NOTICE

THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
Re-enter the B-1 & 2 Zones		XX	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 24

19 73

Following is a ~~notice of intention to do work~~ { on land { ~~XXXX~~ leased } described as follows:LEASE East Poplar UnitMONTANA
(State)Roosevelt
(County)East Poplar Unit
(Field)Well No. 13 NW NW Section 11 T28N R51E 10PM
(m. sec.) (Township) (Range) (Meridian)The well is located 660 ft. from { N } line and 660 ft. from { XX } line of Sec. 11
{ XX } { W }

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is.....

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

East Poplar Unit No. 13 is pumping from the Heath formation at the rate of 238 BWPD 3 BWPD 233 BWPD 96% BS&W (May, 1972 test) which is uneconomical. The pumping fluid level shows 200' of fluid over the pump. A WASP bridge plug and 1 sack of cement was set at 4982' leaving the B-1 & 2 perforations open. The last B-tone test was May, 1969 showing 319 BWPD 19 BWPD 300 BWPD 94% BS&W. Three acid jobs and inhibitor squeezes (scale and corrosion) have been tried on the Heath to increase production with the last two failing. It is proposed to squeeze the Heath formation and reopen the B-1 & 2 Zones and pump test.

Approved subject to conditions on reverse of form

Date JUL 25 1972

ORIGINAL SIGNED BY

By Judson D. Sweet, Petroleum Engineer
District Office Agent

Title

Company MURPHY OIL CORPORATION

By

Title District SuperintendentAddress P.O. Box 347, Poplar, Montana 59255COMMISSION USE ONLY
API WELL NUMBER

2	5								
STATE		COUNTY				WELL			

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate
WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER



(SUBMIT IN QUADRUPPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE

THIS FORM BECOMES A
PERMIT WHEN STAMPED
APPROVED BY AN AGENT
OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Reenter the 2-1 & 2 Zones	XX

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

September 8, 1972

Following is a ~~WHITE OIL COMPANY~~ report of work done on land ~~leased~~ described as follows:LEASE East Poplar UnitMONTANA
(State)Roosevelt
(County)East Poplar Unit
(Field)Well No. 15 SW NW Section 11 T28N R51E NPM
(m. sec.) (Township) (Range) (Meridian)The well is located 660 ft. from N line and 660 ft. from W line of Sec. 11

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2104' G.L.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Squeezed the North Sand perforations with 50 sacks later, 21 HR-4 added. Formation squeezed at 1500 PSI with 8-1/2 bbls. in formation. Left 3-1/2 bbls. in casing. Tagged hard cement at 4718'. Drilled out 121' of cement. Pressure tested squeeze to 1500 PSI for 30 min., Held OK. Drilled out 1 sack of cement and WASP bridge plug and chased past 2-1 & 2 perforations at 3433-44' and 3434-44'. Circulated hole clean. Ran tubing and rods. Put well to pumping.

Workover Potential: 369 BWPD 24% W.O. 347 BWPD 22 BWPD

Approved subject to conditions on reverse of form

Date SEP 12 1972

ORIGINAL SIGNED BY

By Judson D. Sweet, Petroleum Engineer
District Office Agent

Title

Company HERVEY OIL CORPORATIONBy (SIGNED BY W. G. BROWN)Title District SuperintendentAddress P.O. Box 347, Poplar, Montana 59253COMMISSION USE ONLY
API WELL NUMBER

STATE	COUNTY	WELL
25		

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

2

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEYSUBMIT IN TR
(Other instructi
verse side)CATE
on re-Form approved.
Budget Bureau No. 42-R1424.
5. LEASE DESIGNATION AND SERIAL NO.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>		6. IF INDIAN, ALLOTTEE OR TRIBE NAME	
2. NAME OF OPERATOR		7. UNIT AGREEMENT NAME	
Murphy Oil Corporation		East Poplar Unit	
3. ADDRESS OF OPERATOR		8. FARM OR LEASE NAME	
P.O. Box 547, Poplar, Montana 59255		East Poplar Unit	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface		9. WELL NO.	
660' from the North line and 660' from the West line		No. 15	
14. PERMIT NO.		10. FIELD AND POOL, OR WILDCAT	
15. ELEVATIONS (Show whether DF, RT, OR, etc.)		East Poplar Unit	
2104' G.L.		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA	
		NW NW Section 11, T28N, R51E	
		12. COUNTY OR PARISH	
		Roosevelt	
		13. STATE	
		Montana	

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

Reinter B-1 & 2

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

Squeezed the Heath Sand perforations with 50 sacks Latex, 2% HR-4 added. Formation Squeezed at 3500 PSI with 8-1/2 bbls. in formation. Left 3-1/2 bbls. in casing. Tagged hard cement at 4718'; Drilled out 181' of cement. Pressure tested squeeze to 1500 PSI for 30 mins., Held OK. Drilled out 1 sack of cement and WASP bridge plug and chased past B-1 & 2 perforations at 5635-44' and 5634-64'. Circulated hole clean. Ran tubing and rods. Put well to pumping.

Workover Potential: 369 BFPD 94% W.C. 347 BWPD 22 BOPD

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY W. G. BROWN TITLE District Superintendent

DATE September 9, 1972

(This space for Federal or State office use)

APPROVED BY [Signature] TITLE DISTRICT ENGINEER

DATE 9-13-72

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

STATE, B
MURPHY.

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPPLICATE*
(Other instructions on re-
verse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Fort Peck

7. UNIT AGREEMENT NAME

East Poplar Unit

8. FARM OR LEASE NAME

East Poplar Unir

9. WELL NO.

No. 15

10. FIELD AND POOL, OR WILDCAT

East Poplar Unit

11. SEC., T., R., M., OR BLK. AND
SURVEY OR AREA

NW NW Section 11,
T28N, R51E

12. COUNTY OR PARISH 13. STATE

Roosevelt

Montana

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL ☒ GAS ☐
WELL WELL OTHER

2. NAME OF OPERATOR

Murphy Oil Corporation

3. ADDRESS OF OPERATOR

P.O. Box 547, Poplar, Montana 59255

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*
See also space 17 below.)
At surface

660' from the North line and 660' from the West line

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

2104' G.L.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

Reinter B-1 & 2

(NOTE: Report results of multiple completion on Well
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any
proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones perti-
nent to this work.)*

Squeezed the Heath Sand perforations with 50 sacks Latex, 2% HR-4 added. Formation
Squeezed at 3500 PSI with 8-1/2 bbls. in formation. Left 3-1/2 bbls. in casing.
Tagged hard cement at 4718'. Drilled out 181' of cement. Pressure tested squeeze
to 1500 PSI for 30 mins., Held OK. Drilled out 1 sack of cement and WASP bridge plug
and chased past B-1 & 2 perforations at 5635-44' and 5654-64'. Circulated hole clean.
Ran tubing and rods. Put well to pumping.

Workover Potential: 369 BFPD 94% W.C. 347 BFPD 22 BOPD

18. I hereby certify that the foregoing is true and correct

SIGNED ORIGINAL SIGNED BY W. G. BROWN

TITLE District Superintendent

DATE September 9, 1972

(This space for Federal or State office use)

APPROVED BY PAULI
CONDITIONS OF APPROVAL, IF ANY:

TITLE ACT ENGINEER

DATE 9-13-72

*See Instructions on Reverse Side

ORIGINAL FORWARDED TO CASPER



Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
		Jet	4 s.p.f. 2-16		5636-5644	
		Jet	4 s.p.f. 2-16		5654-5664	

TOOLS USED

Rotary tools were used from 0 feet to 5817 feet, and from feet to feet

Cable tools were used from feet to feet, and from feet to feet

DATES

Put to producing February 21, 1953

The production for the first 24 hours was 623 barrels of fluid of which 100% was oil; % emulsion; % water; and % sediment. Gravity, °Bé.

If gas well, cu. ft. per 24 hours Gallons gasoline per 1,000 cu. ft. of gas

Rock pressure, lbs. per sq. in.

EMPLOYEES

Pat Martin, Driller R. J. Massey, Driller
C. B. Morris, Driller

FORMATION RECORD

FROM-	TO-	TOTAL FEET	FORMATION
<u>FORMATION TOPS:</u>			
Eagle	1150		Gyp Springs 4400
Niobrara	1990		Spearfish 4587
Carlisle	2115		Amsden 4698
Greenhorn	2352		Heath 4823
Graneros	2552		Otter 4990
U. Muddy	2700		Kibbey 5122
Muddy	2923		Charles 5374
Dakota Silt	3138		A Zone 5504
Morrison	3473		B-1 Zone 5636
Swift	3557		B-2 Zone 5654
Rierdon	3915		C Zone 5808
Piper Sh.	4270		
Piper Ls.	4343		

10021

10

10170 FEET

(OVER)

10215 10171

10-43094-2

FORMATION RECORD - CONTINUED

DRILL BIT AND TOTCO RECORD

<u>Bit No.</u>	<u>Make</u>	<u>Type</u>	<u>Size</u>	<u>Serial No.</u>	<u>From</u>	<u>To</u>	<u>Total Footage</u>	<u>Degrees</u>
1	Hughes	OSC3J	12 1/4"	60563	0	979	612	1/4°
2	"	OSCLJ	8 3/4"	78329	979	2477	630	1/4°
3	"	"	"	65234	2477	2930	2205	1/4°
4	"	OSCJ	"	18904	2930	3159		
5	"	"	"	18901	3159	3328		
6	"	QWVJ	"	3441	3328	3530		
7	"	QWVJ	"	3426	3530	3734		
8	"	"	"	3710	3734	4000		
9	"	"	"	3431	4000	4282		
10	"	"	"	3443	4282	4464		
11	"	"	"	3445	4464	4677	4677	3/4°
12	"	"	"	3709	4677	4902		
13	"	QWC	7 3/4"	5539	4902	4935		
14	"	QWV	"	3711	4935	4975		
15	"	"	"	3428	4975	5086	5086	1/4°
16	"	QWVJ	"	3425	5086	5245		
17	"	"	"	25080	5245	5480		
18	"	QWS	"	65235	5520	5560		
19	"	"	"	83347	5660	5780		

CORE BIT RECORD

<u>Core No.</u>	<u>Make</u>	<u>Size</u>	<u>Serial No.</u>	<u>From</u>	<u>To</u>	<u>Footage</u>
Core No. 1	Christensen	7 7/8"	#j-1846	4911	4918	7
Core No. 2	Christensen	7 7/8"	#j-1846	5480	5500	20
Core No. 3	Christensen	7 7/8"	#j-1846	5500	5512	12
Core No. 4	Christensen	7 7/8"	#j-1846	5512	5520	8
Core No. 5	Christensen	7 7/8"	#j-1846	5624	5660	36
Core No. 6	Christensen	7 7/8"	#j-1846	5780	5815	35
Total Footage:						118'

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E L E C T R O L O G D A T A

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TYPE OF LOGINTERVAL LOGGED

Schlumberger Electric Log:

2" Electrical Survey

133'-5816'

5" Electrical Survey

2000'-5816'

5" Microlog

2000'-5813'

25" Microlog

5400'-5813'

LOG TOPS

	<u>Depth</u>	<u>Datum</u>	<u>Thickness</u>
Judith River	772	+1344	
Eagle	1150	+ 966	
Niobrara	1990	+ 126	
Carlisle	2155	- 39	
Greshorn	2352	- 236	
Graneros	2552	- 436	
U. Muddy	2700	- 584	
Muddy	2923	- 807	
Dakota Silt	3138	-1022	
Morrison	3473	-1357	
Swift	3557	-1441	
Rierdon	3915	-1799	
Piper Sh.	4270	-2154	
Piper Ls.	4343	-2227	
Gypsum Sprgs.	4400	-2284	
Spearfish	4587	-2471	
Amsden	4698	-2582	
Heath	4823	-2707	
Otter	4990	-2874	
Kibbey	5122	-3006	
Kibbey Ls	5286	-3170	
Madison	5274	-3258	
A-1	5472	-3356	5'
A-2	5485	-3369	4'
A-3	5504	-3388	16'
A-4	5522	-3406	15'
B-1	5636	-3520	8'
B-2	5654	-3538	16'
B-3	5675	-3559	7'
B-4	5710	-3594	6'
B-5	5748	-3632	?
C-1	5790	-3674	?
C-2	5808	-3692	?

===== C O R E D E S C R I P T I O N S =====

Core No. 1

4912-4918

Rec. 3'

C. T. 73, 86, 78, 75, 72/ 53, 65

2'6" Shale, dark brownish-red, slightly mottled with gray; sub-waxy.

6" Siltstone, very light greenish-gray, slightly argillaceous, tight.
No Show.

Core No. 2

5480-5500

Rec. 20'

C. T. 36, 28, 11, 31, 28/ 29, 20, 12, 5, 9/ 11, 15, 12, 20, 23/ 18, 20,
17, 25, 24'

* 2" Limestone, dark brownish-gray, pseudo-collitic with streaks of medium crystalline, medium hard, good vuggy porosity with vugs ranging in size from 1/8" to 1/4"; some vugs seem to be connected; faint oil odor on fresh break, good, bright milky fluorescence; no taste; some free oil bleeding from vugs.

* 4" Limestone, dark brownish-gray, amorphous to microcrystalline, medium hard, numerous fairly short, irregular fractures well cemented with calcite; occasional 1/4" streak of fair vuggy porosity with vugs averaging about 1/8"; faint oil odor on fresh break; bright milky fluorescence; no taste.

* 2" Limestone, very light gray, very argillaceous, medium soft, earthy; occasional very thin, tight, hairline fractures; occasional very small inclusions of clear calcite; entire unit looks wet. No Show.

3" Limestone, same as above unit with numerous 1" to 2" streaks of light gray, fine crystalline anhydrite; anhydrite streaks are dipping at an angle of approximately 20°; numerous thin shale partings having slickenside development. No Show.

2'6" Dolomite, light gray, medium hard, amorphous, occasional fairly large inclusions of light gray, anhydrite; numerous very thin, black shale partings having slickenside development.

2" Anhydrite, light gray, very fine crystalline, medium soft; numerous very thin streaks of light gray, dolomite with an apparent dip of approximately 30°; occasional small fragment of light gray anhydrite in a matrix of medium gray dolomite. No Show.

1" Dolomite and anhydrite; light gray anhydrite and medium gray dolomite; anhydrite occurs as small angular fragments separated by fine crystalline dolomite; anhydrite fragments are so arranged as to give appearance of a flow structure; anhydrite seems to be primary and dolomite secondary.

CORE DESCRIPTIONS

Core No. 2 continued:

5480-5500 Rec. 20¹

- 3¹6¹ Anhydrite, medium gray, with streaks of light gray, fine to medium crystalline, medium soft, dense. No Show.

Note: * - Analyzed by Chemical & Geological Laboratories--Full diameter.

Core No. 3

5500-5512

Rec. 11⁰

C. T. 26, 19, 17, 20, 15/ 22, 21, 32, 28, 60/ 55, 65

- 5⁰ Anhydrite, medium gray, fine to medium crystalline, medium soft, dense; numerous paper-thin black, calcareous shale partings. No Show.
- * 6¹ Limestone, dark brownish-gray, amorphous, medium hard, dense, except for numerous very short, tight, irregular fractures; faint oil odor along fracture planes, fairly even, bright, golden-yellow fluorescence along fracture planes. All fractures are very tight. All show is along fracture planes.

Note: * - Analyzed by Chemical & Geological Laboratories.

Core No. 4

5512-5520

Rec. 8⁰

C. T. 43, 40, 32, 32, 23/ 27, 30, 28

- 8⁰ Limestone, dark gray, medium hard, amorphous, dense, except for fairly numerous short, tight, irregular fractures, fair oil odor and taste along fracture planes; even, bright, golden-yellow fluorescence along some fracture planes; entire unit very tight. All show along fracture planes.

Core No. 5

5624-5660

Rec. 36⁰

C. T. 27, 30, 26, 20, 21/ 21, 18, 16, 17, 16/ 12, 7, 7, 17, 22/ 12, 9, 8, 15, 19/ 23, 20, 23, 20, 30/ 40, 35, 60, 100, 65/ 21, 19, 18, 18, 16/ 18

- 10¹6¹ Anhydrite, light gray, fine crystalline, medium soft, dense, except for numerous fairly large vugs in upper 2 feet caused by solution of salt. No Show.
- 2¹ Limestone, dark brownish-gray, medium crystalline with occasional coarse crystals of brown calcite, slightly porous and permeable; fair oil odor on fresh break, good even dull golden-yellow fluorescence.
- 2⁰ Limestone, dark brownish-gray, medium hard, amorphous, fairly dense, except for numerous short, fairly tight, irregular fractures; occasional small 1/8" vugs, very slightly permeable; fair oil odor along fracture planes, spotted, bright, milky fluorescence along fractures.

CORE DESCRIPTIONS

Core No. 5 continued:

5620-5660 Rec. 35'

- 4' Limestone, brownish-gray, medium soft, fine to medium crystalline, fair porosity and permeability; good oil odor on fresh break, good, even, dull, golden-yellow fluorescence; some free oil bleeding from occasional small pin-point vugs.
- 9'6" Anhydrite, light gray, medium soft, fine crystalline, dense; numerous very thin, irregular, black calcite shale partings. No Show.
- 8' Limestone, dark brownish-gray, fine to medium crystalline, medium soft, fair porosity and permeability; good oil odor and even, dull golden-yellow fluorescence on fresh break; occasional small pin-point vug bleeding free oil; occasional thin 2" streak having no intercrystalline porosity, but having short, vertical fractures extending throughout unit; occasional 1' to 2' fracture, which is fairly well developed, but cemented with calcite.

Core No. 6

5780-5815

Rec. 35'

- C. T. 50, 35, 35, 30, 30/ 25, 35, 25, 35, 35/ 30, 38, 32, 26, 32/ 18, 26, 21, 20, 18/ 17, 15, 12, 20, 13/ 15, 13, 14, 12, 12, 13, 12, 8, 9, 7
- 4' Limestone, brownish-gray, medium crystalline with numerous fairly large crystals of brown calcite, medium hard, dense, except for single, tight, vertical fractures cemented with calcite. No Show.
- 1' Limestone, dark gray, amorphous, medium hard, very argillaceous, dense. No Show.
- 1'6" Limestone, medium gray, fine crystalline, very hard, dense.
- 4' Limestone, brownish-gray, amorphous to microcrystalline, medium hard, dense, except for fairly numerous thin streaks of very slightly porous, medium gray, fine crystalline dolomite. No Show.
- 2' Limestone, brownish-gray, fine crystalline, very hard, dense; occasional very tight, thin, vertical fracture cemented with calcite; occasional fairly large inclusion of brown calcite. No Show.
- 3' Dolomite, medium gray, fine to microcrystalline, very hard, very slightly porous; numerous thin streaks of brownish-gray, crystalline limestone; occasional fairly large calcite inclusions. No Show.
- 6' Limestone, brownish-gray, very fine crystalline, very hard, dense, except for occasional thin, very tight, vertical fracture cemented with calcite; black stylolite at very base of unit. No Show.
- 5' Limestone, brownish-gray, very fine crystalline, very hard, fairly numerous, tight, vertical fractures well cemented with light gray calcite; fractures in lower 2' of unit are broken open with calcite on fracture planes, no show along fractures, or in mass of unit.

CORE DESCRIPTIONS

Cores No. 6 continued:

5751-5815 Sec. 35'

- 3' Limestone, dark brownish-gray, fine crystalline, medium hard, very slightly porous, questionable permeable; fair oil odor and speckled golden-yellow fluorescence; single, fairly tight, vertical fracture extending about 2' into unit from above 5' unit; entire unit very tight with no oil bleeding from core.
- 2' Limestone, light brownish-gray, fine crystalline, very hard, dense, very faint oil odor on fresh break, no fluorescence; otherwise no show.
- 3'6" Limestone, brownish-gray, fine crystalline, medium hard, very slightly porous, questionably permeable; fair oil odor on fresh break; good, dull, even golden-yellow fluorescence; single short, tight, vertical fracture running length of unit; entire unit has very slight porosity except for single vertical fracture which may be tight.

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DRILL STEM TESTS

DST #1, (re-run), ^{Depth.} 4891-4904, straddle packers, 5/8" bottom choke, no water cushion; tool open 1 hour, shut-in 20 minutes. Tool opened with good blow for 20 minutes, increasing to a strong blow for 40 minutes. Gas 3130' from surface. Recovered: 390' clean, black, 39.6° gravity oil, 180' oil and gas cut mud, 445' muddy salt water with show of oil and gas. Chlorides 23,000 ppm. IBHFP: 60# FBHFP: 405# BWHFP: 2275# Hydro: 2705#.

4.3
DST #2, (re-run), Halliburton Tool, 5503-5520, 1/2" bottom choke, no water cushion; tool open 4 hours, with weak blow throughout test; shut-in 20 minutes. Gas 5263' from surface. Recovered: 15' clean, free oil, 75' oil and gas cut mud. IBHFP: 55# FBHFP: 655# Hydro: 3000#.

CORE ANALYSIS REPORTS

Full Diameter Core Study:

Operator MURPHY CORPORATION Field East Poplar Formation A-1 Zone
 Well No. East Poplar Unit #15 Location C NW NW 11-28N-51E Depths 5480-5500
 Elevation 2104 Cr. - 2116 KB Date Feb. 5, 1953 Laboratory No. 18

Sample No.	Representative Of Feet	Footage	Permeability		Porosity Percent	Density		Residual Saturation	
			Radial	Vertical		Bulk	Matrix	% Free Space Oil	Water
Core No. 2		5480-5500	Recovered 20 feet						
1	5480.0-5481.0 (Description: C, V, I, St)	1.0	422	2.9	10.5	2.34	2.61	1.9	34.3
2	5481.0-5482.0 (Description: C, SV, I, St)	1.0	82	6.2	10.7	2.44	2.73	5.7	50.5
3	5482.0-5483.0 (Description: C SV, I, St)	1.0	7.01	1.9	4.2	2.55	2.66	7.4	76.2
4	5483.0-5484.0 (Description: C, SV, I, St)	1.0	30	6.4	6.9	2.55	2.74	Tr.	33.3
5	5484.0-5485.0 (Description: C, I)	1.0	1.04	0.5	6.1	2.57	2.73	0	23.0
6	5485.0-5486.0 (Description: C, I)	1.0	0.29	0.2	4.8	2.60	2.73	0	93.8
7	5486.0-5487.0 5487.0-5500.0	1.0 13.0	0.51	0.08	13.1	2.28	2.62	0	19.8
			Not received for analysis.						

C - Cracked I - Intergranular
 V - Vugs St - Stained
 SV - Small Vugs

CORE ANALYSIS REPORTS Continued:

Operator MURPHY CORPORATION Field East Poplar Formation A-Zone Madison
C NW NW
 Well No. East Poplar Unit #25 Location 11-28N-51E Depths 5505-5511
 Elevation 2104 Gr. - 2116 KB Date Feb. 7, 1953 Lab. No. 18

Full Diameter Core Study:

Sample No.	Representative Of Feet	Footage	Permeability		Porosity Per Cent	Density		Residual Saturation	
			Radial	Vertical		Bulk	Matrix	% Pore Space Oil	Water

Core No. 3		5505-5511	Recovered 6 feet						
8	5505.0-5506.0	1.0	0.19	2.7	1.3	2.68	2.71	Tr.	38.2
9	5506.0-5506.2	0.2	33	28	3.8	-	-	-	-
10	5506.2-5507.0	0.8	0.38	0.02	2.1	2.70	2.75	Tr.	3.0
11	5507.0-5508.0	1.0	0.40	0.5	1.0	2.68	2.71	Tr.	17.0
12	5508.0-5509.0	1.0	33	28	3.0	2.66	2.76	0	0.0
13	5509.0-5511.0	2.0	833	7.4	5.0	2.63	2.77	Tr.	5.0

Core No. 4		5512-5520	Recovered 8 feet						
14	5512.0-5514.0	2.0	0.33	0.01	1.3	2.69	2.72	Tr.	13.1
15	5514.0-5515.5	1.5	0.07	0.01	3.0	2.69	2.77	Tr.	10.0
16	5515.5-5518.0	2.5	12	2.3	0.7	2.69	2.71	Tr.	85.7
17	5518.0-5520.0	2.0	0.63	0.6	1.7	2.69	2.73	Tr.	26.7

CORE ANALYSIS REPORTS continued:

Operator MURPHY CORPORATION Field East Poplar Formation B - Zone
 Well No. East Poplar Unit #15 Location 11-28N-51E Depths 5624-5660
 Elevation 2104 Gr. - 2116 KB Date Feb. 9, 1953 Lab. No. 18

FULL DIAMETER CORE STUDY:

Sample No.	Representative Of Feet	Footage	Permeability		Porosity Per Cent	Density		Residual Saturation	
			Radial	Vertical		Bulk	Matrix	% Pore Space Oil	Water

	Core No. 5	5624-5660	Received 17 feet						
	5624.0-5634.0		Not received for analysis.						
17	5634.0-5635.0	1.0	0.35	0.12	6.7	2.59	2.78	7.2	84.2
18	5635.0-5636.0	1.0	5.52	3.6	16.2	2.27	2.71	5.5	17.9
19	5636.0-5637.0	1.0	22	1.9	17.0	2.22	2.67	16.3	53.7
20	5637.0-5638.0	1.0	13	1.1	9.4	2.46	2.71	2.2	34.6
21	5638.0-5639.0	1.0	36	5.0	5.5	2.55	2.70	Tr.	100.0
22	5639.0-5640.0	1.0	19	1.4	6.8	2.47	2.65	14.4	13.8
23	5640.0-5641.0	1.0	14	2.0	11.4	2.33	2.63	10.8	35.7
24	5641.0-5642.0	1.0	3.12	1.9	11.8	2.38	2.70	11.8	19.0
25	5642.0-5643.0	1.0	1.17	0.68	9.6	2.48	2.74	15.5	42.3
	5643.0-5652.0	9.0	Not received for analysis.						
26	5652.0-5653.0	1.0	8.31	5.0	16.1	2.25	2.69	2.5	15.0
27	5653.0-5654.0	1.0	6.06	6.5	14.3	2.29	2.68	3.4	51.0
28	5654.0-5655.0	1.0	7.53	12	12.9	2.33	2.67	11.2	10.7
29	5655.0-5656.0	1.0	1.57	15	10.2	2.42	2.69	2.0	18.6
30	5656.0-5657.0	1.0	15	2.3	8.6	2.47	2.65	5.7	92.3
31	5657.0-5658.0	1.0	5.48	1.8	9.8	2.41	2.66	Tr.	35.7
32	5658.0-5659.0	1.0	8.61	1.4	8.4	2.46	2.69	Tr.	50.5
33	5659.0-5660.0	1.0	1.77	1.5	9.3	2.42	2.60	2.9	78.3

CORE ANALYSIS REPORTS continued:

Operator MURPHY CORPORATION Field East Poplar Formation C - Zone
 Well No. East Poplar Unit #15 Location 11-28N-51E Depths 5801-5815
 Elevation 2104 Gr. - 2116 KB Date Feb. 12, 1953 Lab. No. 18

FULL DIAMETER CORE STUDY:

Sample No.	Representative Of Feet	Footage	Permeability		Porosity Per Cent	Density		Residual Saturation % Pore Space	
			Radial	Vertical		Bulk	Matrix	Oil	Water
Core No. 6 5801-5815 Recovered 14 feet									
34	5801.0-5802.0	1.0	-0.01	-0.01	2.1	2.64	2.70	4.8	78.6
35	5802.0-5803.0	1.0	-0.01	-0.01	2.3	2.65	2.71	Tr.	94.3
36	5803.0-5804.0	1.0	0.01	5000%	2.9	2.61	2.69	Tr.	50.7
37	5804.0-5805.0	1.0	-0.01	5000%	4.1	2.64	2.75	0.0	11.7
Sim. to 37	5805.0-5806.0	1.0	-0.01	5000%	4.1	2.64	2.75	2.2	69.0
38	5806.0-5807.0	1.0	0.02	0.62	3.3	2.56	2.65	55.5	39.4
39	5807.0-5808.0	1.0	0.01	22.3	3.9	2.56	2.66	17.7	74.4
40	5808.0-5809.0	1.0	0.05	0.46	6.6	2.47	2.65	17.0	79.0
41	5809.0-5810.0	1.0	0.02	-0.01	2.6	2.58	2.65	17.7	63.1
42	5810.0-5811.0	1.0	-0.01	-0.01	2.0	2.58	2.63	28.0	60.0
43	5811.0-5812.0	1.0	0.02	-0.01	2.9	2.58	2.66	3.1	8.6
44	5812.0-5813.0	1.0	-	5.8	3.6	2.56	2.66	48.3	47.2
45	5813.0-5814.0	1.0	0.05	5000%	8.4	2.49	2.72	22.9	38.5
Sim. to 45	5814.0-5815.0	1.0	0.05	5000%	8.4	2.49	2.72	21.1	26.5

CONCRETE DATA

Total Depth: 5815' Driller equals 5817' Schlumberger.

Ran tubing with 1/2 3/4" bit and Baker wall scraper. Tested 5 1/2" casing with 1075#, held okay; top of cement at 5758 feet; float at 5762 feet; top of shoe at 5798 feet. No cement from 5802 to 5817 TD, (15 feet of open hole). Note: time to drill Baker fill-up-float collar and rubber plug was 4 hours and 51 minutes; baker fill-up shoe was 3 hours and 5 minutes). Ran Baker wire line junk basket on McCullough wire line to 5727 feet; could not get to bottom. Went in hole with bit and scraper to condition mud. Found mud heavy with cuttings of cement, rubber and float shoe material. Ran wire line junk basket to bottom, (5819' McCullough equals 5817' Schlumberger). Perforated 5654 to 5664 with 1/2 jet shots per foot; perforated 5636 to 5644 with 1/2 jet shots per foot. (Schlumberger measurements). Made two trips with wire line junk basket, and then ran Baker No. 35, 15.50#, Model "D" Production Packer on wire line, set at 5780 feet.

Ran 185 joints of 2 3/8", 1.70#, J-55, 8 rd. thd. range 2, American tubing and subs (5769.40'); landed 10.60 feet below RKB. spaced as follows:

Top joint tubing.....	30.30'
1 Sub.....	6.09'
184 joints tubing.....	5731.06'
distance below RKB.....	10.60'
Otis Side-door Choke.....	1.32'
Baker Model "B" Latch-on Sub.....	.63'

Top of Production Packer.....5780.00'

2 Baker Seal Nipples.....	2.19'
Baker Flush Joint.....	17.55'
Perforation.....	3.18'
Baker Seal Nipple.....	.83'
Flush Joint plugged.....	2.20'

Bottom of Tubing.....5805.95'

Note: To pull tubing, pull 3000# to 400#, or 12-15 inches; turn 15 rounds to the right.

Displaced mud with water and water with oil. Acidized "B" Zones at 5636 to 5644 feet and 5654 to 5664 with 1000 gallons regular 15% Dowell acid. Displaced acid with oil at rate of 1/2 barrels per minute, 2350# maximum pressure 2250# minimum pressure after pumping 1475#. Flowed acid back in 24 minutes; started showing oil in 34 minutes. Cleaned to 25% acid water. Closed in and put on 1/2" choke. TFP: 250# TSIP: 600# ESMW: 2% CSIP: 900#.

COMPLETION DATA

Acidized "C" Zone, 5600-5717, w/ 1000 gallons, regular 15% Dowell acid. Formation broke at 1500#, then pressure bled back to 1400#. Displaced 3.5 barrels of acid per minute at the maximum pressure of 2800#; minimum pressure after pumping, 1600#. Flowed acid back in 137 minutes. Flowed acid water 30 minutes showing little oil; made only 3 small heads in 8 hours, (muddy acid water with trace of oil). Swabbed well down to 2000 feet and shut-down for darkness. Began flowing small heads at 1:00 A.M., 1-4 minute heads, from 1-1/4 hour and 15 minutes between heads. Started swabbing at 6:30 A.M. and swabbed down to 5000 feet by 10:00 A.M.; swabbing 5 barrels of fluid per hour, and 20-30% water.

Stratafrac'd with 1000 gallons of gelled acid, followed with 2000 gallons of regular 15% Dowell acid; maximum pressure 3000#, minimum pressure 2200#. Displaced 5 barrels per minute at 2200#. Pressure after pumping 1400#. Flowed acid to surface in 24 minutes; started showing oil in 45 minutes and 5% acid water in 60 minutes. Finished cleaning on 1/4" choke; flowed 45 minutes into pit, no show of BS&W. On a 1/4" choke, TFP: 450# CSIP: 800# TSIP: 900# Shut-in well and released rig at 6:00 P.M., 2-18-53.

SUMMARY OF COMPLETION DATA

Casing: Ran 175 joints (5788.40') of 5 1/2" casing, set at 5800 feet; cemented with 250 sacks of regular cement.

Tubing: Ran 185 joints (5769.40') of 2 3/8" tubing and subs; bottom of tubing at 5805.95'.

Packers: Baker Model "D" Production Packer set at 5780 feet.

Perforations: "B-1" Zone: Perforated interval 5635-5644, w/4 jet s.p.f.
"B-2" Zone: Perforated interval 5654-5664, w/4 jet s.p.f.

Acid Treatment: "B" Zones: 1000 gallons of regular acid.
"C" Zone: 1000 gallons of regular acid. Stratafrac'd w/1000 gallons of gelled acid followed w/2000 gallons of regular acid.

Type Completion: DUAL: "B" Zone flowing through annulus.
"C" Zone flowing through tubing.

PRODUCTION TEST DATA

EAST POPLAR UNIT WELL NO. 15

February 25, 1953

Tubing Production Test: "C" Zone

<u>Time</u>	<u>Choke</u>	<u>FP</u>	<u>BS&W</u>	<u>Water</u>	<u>Oil</u>	<u>Date of Test</u>
2 hours	1/4"	525#	3.2	2.68	81.17	2-23-53
2 hours	12/64"	825#	.4	Neg.	55.43	2-23-53
2 hours	8/64"	975#	.4	Neg.	<u>27.04</u>	2-23-53

Casing Shut-in Pressure: 850#

Tubing Shut-in Pressure: 1050#

TOTAL OIL ON SIX-HOUR TEST: 163.64

Casing Production Test: "B" Zone

<u>Time</u>	<u>Choke</u>	<u>FP</u>	<u>BS&W</u>	<u>Water</u>	<u>Oil</u>	<u>Date of Test</u>
2 hours	1/4"	400#	.1	Neg.	71.71	2-24-53
2 hours	12/64"	625	.1	Neg.	50.03	2-24-53
2 hours	8/64"	725#	.1	Neg.	<u>24.33</u>	2-24-53

Tubing Shut-in Pressure: 1050#

Casing Shut-in Pressure: 850#

TOTAL OIL ON SIX-HOUR TEST: 146.07

MUD PROGRAM SUMMARY

Total Mud Additives Used: Controlgel, 209 sacks; Controlbar, 450 sacks; Quebracho, 31 sacks; Caustic Soda, 58 cans; Driscose, 7 sacks; Phosphates, 2 sacks.

Cost of Additives: \$3790.25

Trucking Cost: 140.95

Total Cost: \$3931.20

Drilled surface hole to 970 feet with water. Set 9 5/8" casing at 962 feet and cemented with 400 sacks of Dakota cement. Clean cement circulated to surface. Drilled cut from under surface pipe to approximately 2700 feet with water and then began building up a caustic soda-quebracho mud while drilling. Controlgel was added as necessary to control viscosity and small additions of Driscose were used to control water loss. At approximately 4300 feet approximately 800# of caustic soda and 400# of quebracho were added to increase the PH factor to 12, prior to drilling into the anhydrite section. This high PH was maintained with caustic soda to total depth. Controlbar was added to off-set oil cutting mud at approximately 4900 feet.

Mud characteristics from 3700 feet to total depth were as follows:

<u>Depth</u>	<u>Mud Weight</u>	<u>Viscosity</u>	<u>Water Loss</u>	<u>PH</u>
3700	10.7#/gal.	38 sec.	9.0 cc.	9.5
4100	10.5#/gal.	60 sec.	5.6 cc.	10.5
4300	10.4#/gal.	35 sec.	6.0 cc.	10.8
4370	10.2#/gal.	37 sec.	6.0 cc.	12.8
4600	10.4#/gal.	50 sec.	6.0 cc.	10.5
4920	9.8#/gal.	45 sec.	10.0 cc.	12.0
4933	10.9#/gal.	48 sec.	6.0 cc.	12.0
5011	10.8#/gal.	55 sec.	6.0 cc.	12.0
5380	10.6#/gal.	48 sec.	9.4 cc.	11.5
5777	10.4#/gal.	53 sec.	19.3 cc.	11.8
5815	10.4#/gal.	51 sec.	14.0 cc.	12.0

Ran and set five and one-half inch casing at 5762 feet with 250 sacks of regular, 2% gel cement without difficulty.

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S A M P L E D E S C R I P T I O N

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0 -2000 No Samples.

2000-2020 Shale, medium gray, fairly soft, very calcareous with numerous small, tan, chalky specks.

2020-2310 Shale, medium gray, medium soft, very slightly silty.

2310-2425 Shale, as above, with trace of very fine grained, slightly porous sandstone.

2425 Sample Top: Greenhorn.

2425-2490 Shale, dark gray, medium firm, very calcareous; numerous small tan, calcareous specks; trace of dense, brown, amorphous limestone.

2490-2620 Shale, medium gray, medium soft, fairly firm.

2620-2700 Shale, medium gray, medium hard, chunky; trace of light gray siltstone, trace of white bentonite.

2700-2820 Shale, medium to dark gray, firm, medium hard, chunky.

2820-2930 Shale, as above; some light gray, very fine grained sandstone and siltstone.

2930 Sample Top: Muddy Sand.

2930-2980 Sandstone, medium gray, medium grained, calcareous, very porous; some medium gray, soft, slightly calcareous shale.

2980 Sample Top: Skull Creek.

2980-3100 Shale, dark gray, medium hard, firm, splintery; some bluish gray clay; trace of light gray siltstone.

3100-3190 Shale, dark gray, medium hard, splintery; some light gray, fine grained, calcareous sandstone.

3190 Sample Top: Dakota

3190-3340 Shale, dark gray, medium hard, splintery, streaks of light gray fine to medium grained, porous sandstone.

3340-3400 Sandstone, light gray to white, medium grained, well rounded, porous ; some medium to dark gray shale.

3400-3495 Shale, brownish-gray, medium hard, firm, micaceous; trace of light gray, medium grained, porous sandstone.

SAMPLE DESCRIPTION

- 3495 Sample Top: Morrison.
- 3495-3555 Shale, dark gray, medium grained, firm, chunky.
- 3555 Sample Top: Swift.
- 3555-3640 Sandstone, light gray, medium grained, porous, very glauconitic, sand grains, rounded to subrounded and well sorted; some firm, gray shale.
- 3640-3800 Shale, medium brownish-gray, firm, chunky; some fine to medium grained light gray, glauconitic sandstone; trace of dense brown limestone at 3600 feet.
- 3800-3910 Shale, light gray, medium firm, slightly calcareous; some brownish gray, firm, non-calcareous shale.
- 3910 Sample top: Rierdon.
- 3910-3980 Sandstone, light gray, fine grained, calcareous, slightly porous; some light gray, calcareous shale.
- 3980-4030 Shale, medium to dark gray, slightly calcareous, chunky; trace of light gray, calcareous, fine grained sandstone.
- 4030-4105 Shale, light greenish-gray, slightly calcareous, splintery; trace of pyrite.
- 4105-4265 Shale, as above, with some brownish-gray, dense, amorphous limestone.
- 4265 Sample Top: Piper Shale.
- 4265-4340 Shale, dark red, silty, medium soft; some dark gray, chunky shale; trace of soft white gypsum; trace of green shale; trace of brown dense limestone; trace of light gray, very fine grained, calcareous sandstone.
- 4340 Sample Top: Piper Limestone.
- 4340-4390 Limestone, dark brown, amorphous, dense; trace of red, green and gray shale.
- 4390 Sample Top: Gypsum Springs.
- 4390-4450 Shale, light gray, medium firm, splintery, slightly calcareous; some light gray, fine grained, calcareous sandstone; trace of dense, brown limestone; trace of pyrite.
- 4450-4500 Shale, as above, with trace of dense brown, microcrystalline limestone at base.
- 4500-4520 Shale, as above, with some dense, light brownish-gray limestone.

SAMPLE DESCRIPTION

- 4500-4540 Shale, light gray, medium firm, splintery; some brown microcrystalline limestone; trace of medium grained, slightly calcareous sandstone.
- 4540-4580 Shale, light gray, medium firm, slightly calcareous; trace of gray crystalline limestone; trace of dark red, silty shale.
- 4580 Sample Top: Spearfish.
- 4580-4680 Siltstone, redd very fine grained, fairly porous; trace of soft, white gypsum; trace of soft red silty shale.
- 4680-4710 Sandstone, red, very fine grained, fairly porous; trace of light gray limestone; trace of red silty shale.
- 4710 Sample Top: Amsden.
- 4710-4740 Limestone, light gray, amorphous, dense; some light pink crystalline dolomite; trace of red, green and gray shale.
- 4740-4800 Limestone, medium brown, amorphous, dense; some red, green, gray, purple shale.
- 4800-4850 Shale, red, gray, green and purple, medium soft, slightly ankeritic, variegated; some dense, light gray, amorphous limestone.
- 4850 Sample Top: Heath.
- 4850-4880 Shale, red, green and gray, medium firm, splintery gray shale; trace of dense, light gray, amorphous limestone.
- 4880-4911 Sandstone, red and gray, fine to medium grained, very porous, angular; trace of red green gray shales.
- 4911-4918 Core No. 1, recovered 3 feet.
- 4918-4980 Shale, red and gray, firm, chunky; some reddish-brown and gray, fine to medium grained, angular sandstone; trace of green shale.
- 4980 Sample Top: Otter.
- 4980-5005 Shale, red and gray, firm, slightly calcareous; some firm green shale.
- 5005-5080 Shale, red, green, gray, firm, calcareous; some dense, light gray, amorphous limestone.
- 5080-5105 Shale, as above, with trace of light gray to white anhydrite.
- 5105-5145 Limestone, very light gray, sandy, medium hard, fairly porous; some light gray, slightly calcareous shale; trace of red and green shale; trace of white anhydrite.

SAMPLE DESCRIPTION

- 5145-5160 Limestone, very light gray, crystalline, dense; some gray, calcareous shale; trace of red shale.
- 5160 Sample Top: Kibbey Sand.
- 5160-5200 Sandstone, red and light gray, fine to medium grained, poorly sorted, subrounded to rounded, frosted grains; trace of red, gray and green shale.
- 5200-5225 Shale, dark gray to black, carbonaceous; some red, fine grained sandstone; trace of red and green shale.
- 5225-5240 Sandstone, light gray and red, fine to medium grained, poorly sorted, subrounded; trace of red, green and gray shale.
- 5240-5260 Shale, medium to dark gray, firm, slightly carbonaceous; some red, fine to medium grained, poorly sorted sandstone.
- 5260-5285 Sandstone, light brownish-gray, medium grained, poorly sorted, subrounded, frosted; trace of red, green and gray shale.
- 5285 Sample Top: Kibbey Limestone.
- 5285-5300 Limestone, very light gray, amorphous, dense; numerous small brown crystals of dolomite; trace of fine grained, red sandstone; trace of white anhydrite.
- 5300-5310 Limestone, very light brownish-gray, sandy with numerous fine sand grains; some dense brown limestone.
- 5310-5330 No Samples.
- 5330-5385 Sandstone, red, very fine grained, calcareous; numerous medium to coarse, frosted grains scattered throughout.
- 5385 Sample Top: Madison.
- 5385-5395 Anhydrite, white, soft; trace of red, fine grained sandstone and siltstone.
- 5395-5415 Sandstone, red, very fine grained, very silty; trace of white anhydrite.
- 5415-5460 Dolomite, very dark gray, fine crystalline, dense; some soft white anhydrite; trace of light gray, fine crystalline limestone.
- 5460-5480 Limestone, dark brownish-gray, pseudo-colitic, medium soft; some soft, white anhydrite; trace of dark gray, fine crystalline dolomite.
- 5480-5500 Core No. 2, recovered 20 feet.

SAMPLE DESCRIPTION

- 5500-5512 Core No. 3, recovered 11 feet.
- 5512-5520 Core No. 4, recovered 8 feet.
- 5520-5540 Limestone, brownish-gray, fine to medium crystalline, porous; some dense brownish-gray, limestone; trace of white anhydrite at base.
- 5540-5560 Limestone, dark gray to black, amorphous to fine crystalline, very argillaceous; some soft white anhydrite; trace of light gray, fine crystalline dolomite.
- 5560-5570 Anhydrite, white, medium soft, fine crystalline; some dark gray, fine crystalline, argillaceous limestone.
- 5570-5580 Dolomite, medium gray, fine crystalline, dense; some dark gray argillaceous limestone; some soft, white anhydrite; trace of red dolomitic shale.
- 5580-5600 Salt and anhydrite, clear amorphous salt, soft white anhydrite; trace of brownish-gray, amorphous fine crystalline limestone.
- 5600-5624 Anhydrite, light gray to white, medium soft; trace of light gray fine crystalline dolomite; trace of medium gray, fine crystalline limestone.
- 5624-5660 Core No. 5, recovered 36 feet.
- 5660-5670 Limestone, dark gray, fine crystalline, fairly porous, good oil fluorescence and stain.
- 5670-5680 Dolomite, light gray, soft, earthy; some brownish-gray, amorphous limestone; trace of white anhydrite.
- 5680-5690 Dolomite, light gray, very sandy; numerous coarse sand grains; some dark brownish-gray, amorphous limestone.
- 5690-5730 Dolomite, brownish-gray, amorphous, dense; some brownish-gray, fine crystalline limestone; trace of soft white anhydrite.
- 5730-5760 Limestone, brownish-gray, fine crystalline, dense; some dense amorphous dolomite; trace of soft, white anhydrite.
- 5760-5780 Dolomite, brownish-gray, amorphous, dense; some brownish-gray, amorphous limestone; trace of white anhydrite.
- 5780-5815 Core No. 6, recovered 35 feet.

-TOTAL DEPTH: 5815' Driller equals 5817' Schlumberger.

C. A. WHITE
Sales and Service
Eng. Dept.

SUB-SURFACE SURVEY

STATIC

Company Murphy Corporation Field East Poplar Lease and Well E.P.U. # 15
County Roosevelt State Montana Date May 21, 1954

T-D. 5817'

Formation Madison

Elevation 2116' KB

Casing 5 1/2" OD @ 5800'

Perforation 5636-44, 5654-64'

Tubing Packer @ 5780'

Datum Point 5556'

<u>DEPTH (ft.)</u>	<u>EXTENSION (in.)</u>	<u>PRESSURE (psi)</u>	<u>GRADIENT (#/100')</u>
TH	0.685	681	
1000	1.070	1052	37.1
2000	1.434	1395	34.3
3000	1.795	1730	33.5
4000	2.150	2065	33.5
5000	2.512	2411	34.6
5200	2.589	2480	34.5
5400	2.663	2548	34.0
5656	2.751	2632	32.8

REMARKS:

All measurements are from KB.
Temperature at 5656' ... 246° F.
This is a re-run from the May survey.

Location: C NW NW Sec. 11-T28N-R51E

Spacing = 40 acres

Elevation: 2104 Gr. - 2116 K.B.

Spudded: 1-1-53

Completed: 2-18-53

T.D.: 5815' Drllr = 5817' Schl.

Prod. Zones: B-1 (5635-44') B-2 (5654-64')

C-2 (5800-17')

Coring Intervals:

#1 4911-4918 Rec. 3' Heath

#2 5480-5500 Rec. 20' A-2

#3 5500-5512 Rec. 11' A-3

#4 5512-5520 Rec. 8' A-3

#5 5624-5660 Rec. 36' B-1 & 2

#6 5780-5815 Rec. 35' C-1 & 2

Schlumberger Tops

	Depth	Datum	Thickness
Judith River	772	+1344	
Greenhorn	2352	- 236	
Muddy Sd	2923	- 807	
Dakota Silt	3138	-1022	
Piper Ls	4343	-2227	
Amsden	4698	-2582	
Heath	**4823	-2707	
Otter	4990	-2874	
Kibbey Sd	5122	-3006	
Kibbey Ls	5286	-3170	
Madison	5374	-3258	
A-1	**5472	-3356	5'
A-2	**5485	-3369	4'
A-3	**5504	-3388	16'
A-4	**5522	-3406	15'
B-1	5636	-3520	8'
B-2	5654	-3538	16'
B-3	**5675	-3559	7'
B-4	**5710	-3594	6'
B-5	5748	-3632	?
C-1	**5790	-3674	?
C-2	**5808	-3692	?

**Probable prod. Zones (From DST structural position, etc.)

*Shows

Drill Pipe Corrections (Made)

3735' Driller = 3725' SLM (-10')

5630' Driller = 3625' SLM (-5')

Drill Stem Tests:

DST #1 re-run 4891-4904, Heath. Op 1 hr.

SI 20 min. Rec. 390' cln, blk 39.6 grav.

oil, 180' o & g cut mud, 445' muddy s.w.

w/show o & g. Chl. 23,000 ppm. IBHFP 60,

FBHFP 405, BHSIP 2275, Hydro 2705.

DST #2 re-run 5503-20', A-3. Op 4 hrs, SI

20 min. Rec. 15' cln, free oil, 75' o & g

cut mud. IBHFP 55 BHSIP 665 Hydro 3000.

History Subsequent to Completion:

4-17-55: Blanked off B-1 and B-2 zones.

SERVICE & TESTING

WORKOVER HISTORY NO. 1

February 17, 1959

Lease and Well Number: East Poplar Unit Well No. 15

Field: East Poplar County: Roosevelt State: Montana

Well Location: C NW NW Section 11, T28N, R51E

Status Prior to Present Job:

Date Completed: February 18, 1953 Date of Last Workover: None T.D.: 5817'

PBTD: 5800' Producing Zone: "B1 & 2" Zones of Madison Formation

Perforations: "B-1" Zone -- 5630-5644' and "B-2" Zone -- 5654'-5664'

Cumulative Production through December, 1958: 292,226 BO and 158,121 BW

Latest Test: January, 1959, pumping 452 BFPD, 80% water (90 BOPD, 362 BWPD)

Justification for Workover: to increase production and lower water cut.

Summary of Workover:

- 1-19-59 PBTD 5800' - Rigged up pulling machine to DOC squeeze "B-1" (5635-44') and "B-2" (5654-64').
- 1-20-59 PBTD 5800' - Down due to power failure. Workover rig unable to work due to sub-zero and blizzard conditions.
- 1-21-59 PBTD 5800' - Waiting for weather to clear.
- 1-22-59 PBTD 5800' - Preparing to DOC squeeze "B1 & 2" Zone perforations.
- 1-23-59 PBTD 5800' - Spotted gel plug above packer and DR plug. Reverse circulated hole with oil, and broke formation. Injected 2 BPM at 1800#. Squeezed "B-1" (5635-44') and "B-2" (5654-64') perforations with 50 sacks regular cement mixed with diesel oil. Squeezed 30 sacks out into formation. Maximum pressure 2500#. Reversed out excess cement. Cleared perforations with 3 barrels of oil at 2300#. Shut in overnight.
- 1-24-59 PBTD 5800' - Pumping.
- 1-25-59 PBTD 5800' - Water 80%. No test, Chlorides 85,000 PPM.
- 1-26-59 PBTD 5800' - On 24 hour test, pumped at the rate of 80 BFPD, 92% water (6 EOPD, 74 BWPD).
- 1-27-59 PBTD 5800' - On 18 hour test, pumped at the rate of 86 BFPD, 94% water (81 BWPD, 5 BOPD).

Summary of Workover continued

1-28-59 PBTD 5800' - Pumping, no test, water cut 82%.

1-29-59 PBTD 5800' - On 20 hour test, pumped at the rate of 68 BFPD, 83% water (12 BOPD, 56 BWPD).

1-30-59 PBTD 5800' - On 24 hour test, pumped at the rate of 70 BFPD, 73% water (19 BOPD, 51 BWPD), chlorides 88,000 PPM.

1-31-59 PBTD 5800' - On 20 hour test, pumped at the rate of 81 BFPD, 76% water (19 BOPD, 62 BWPD).

2-1-59 PBTD 5800' - On 20 hour test, pumped at the rate of 79 BFPD, 79% water (16 BOPD, 63 BWPD).

2-2-59 PBTD 5800' - On 7 hour test, pumped at the rate of 80 BFPD, 76% water (19 BOPD, 61 BWPD).

2-3-59 PBTD 5800' - On 19 hour test, pumped at the rate of 86 BFPD, 81% water (16 BOPD, 70 BWPD). To treat with MEA as soon as the weather breaks.

2-4-59 PBTD 5800' - Pumping, no test.

2-5-59 PBTD 5800' - Treated "B-1" Zone perforations (5635-44') and "B-2" Zone perforations (5654-64') with 500 gallons MCA. Spot acid down casing. Injected MCA at rate of 1 BPM at 2000#. Bleed back 4 barrels MCA, then pumped back into formation. Repeated same operation 4 times. Started well pumping.

2-6-59 PBTD 5800' - Pumping, no test.

2-7-59 PBTD 5800' - On 24 hour test, pumped at the rate of 242 BFPD, 84% water (39 BOPD, 203 BWPD), Chlorides 97,000 PPM.

2-8-59 PBTD 5800' - Pumping, no test.

2-9-59 PBTD 5800' - On 18 hour test, pumped at the rate of 244 BFPD, 87% water (32 BOPD, 212 BWPD).

2-10-59 PBTD 5800' - Pumping, no test.

2-11-59 PBTD 5800' - Pumping, no test.

2-12-59 PBTD 5800' - On 18 hour test, pumped at the rate of 371 BFPD, 86% water (52 BOPD, 319 BWPD). This is the "B1 & 2" Zone workover potential, to drop from report.

Recap of Workover:

1. Final Perforations: 5635-5644' and 5654-5664' (unchanged)
2. Final FBTD: 5800' (unchanged)
3. Workover Potential: Pumping 371 BFPD, 86% water (52 BOPD, 319 BFPD)
4. Geologic Name of Producing Zone: "B1 & 2" Zones of Madison Formation

Results of Workover: Oil production decreased from 90 BPD to 52 BPD and water production decreased from 362 BPD to 319 BPD, or from 80% to 86%.
Workover Unsuccessful.

DATE: April 16, 1955

FROM: Murphy Corporation
Rocky Mountain District
Poplar, Montana

TO:

May, 1969

EAST POPLAR UNIT NO. 15

WORKOVER HISTORY NO. 2

Lease and Well Number: East Poplar Unit No. 15

Field: East Poplar County: Roosevelt State: Montana

Well Location: C NW NW Section 11, T28N, R51E

STATUS PRIOR TO PRESENT JOB:

Date Completed: February 18, 1959 Date Last Workover: February, 1959

Producing Zone: B-1 & 2 Zones Perforations: 5635-44' & 5654-64'

T.D.: 5917' PBTD: 5800' Cumulative Production: C-Zone 44,595 BG

171,050 BW B-1 & 2 Zones 425,514 BG 1,194,028 BW

Latest Test: May 15, 1969 319 BFPD 94% W.C. 300 BWPD 19 BOPD

JUSTIFICATION FOR WORKOVER:

Run Cement Bond, Neutron and Collar Logs. Set drillable bridge plug with one sack of cement on top (block squeeze if needed). Perforate the Heath Sand porosity 4891-99' (8') 1 hole per foot. Swab test. Acidize with 500 gallons (if needed) to clean up and Sand Frac with 10,000# 20-40 Sand and 5,000# 12-20 Beads. Production Test.

SUMMARY OF WORKOVER:

5-23-69 5800' PBTD Rig up pulling unit to perforate Heath Sand 4891-99'. Pulled rods and shut down for the night.

5-24-69 5800' PBTD Pulled and strapped tubing out of hole. Ran Neutron Correlation and Collar Log from 5717 to 4809' and Sonic Cement Bond from 5714' to 4600'. Found top of cement at 4796'. Good to fair cement bond 5714' to 5600', excellent bond 4892 to 4878', fair bond 4878' to 4850', good bond 4850' to 4834'. Balance of bond ragged.

Ran gauge ring and junk basket. Ran WSP bridge plug on wireline. Set top of plug at 5000'. Dumped 1 sack of cement on top of bridge plug. New PBTD 4992'.

Installed BOP. Filled 5-1/2" casing with salt water and tested casing and bridge plug to 1500#, Held OK.

Perforated the Heath Formation from 4891' to 4899' with Wireline Sabre Jet Gun and 50 gram jets, 1 hole per foot.

Removed BOP and ran Baker Rat-matic Packer on 2-7/8" tubing and hydro-tested tubing in hole to 5000'. Ran 1 joint 2-7/8" nail pipe below packer and landed bottom of nail pipe at 4907'.

Rigged up swab line and made 4 runs with same. Could not detect any fillup. Shut down due to darkness. Fluid level 4900'.

5-25-69 4902' BFPD Fluid to surface Tubing pressure 700# after 10 hr. shut in. Open well to test tank. Flowed 2 bbls. oil in 30 mins., well dead. Shut in for 20 mins... Pressure build up 35 PSI

Rigged up swab line and swabbed as follows:

1st. Run	19.38 Bbls. Fluid at 15% Water	No fillup
2nd. Run	4.56 Swab rubbers	core up lost bottom fluid
3rd. Run	6.84 BF @ 26% Water	500' Fillup
4th. Run	3.42 BF @ 44% Water	200' Fillup
5th. Run	3.42 BF @ 35% Water	200' Fillup
6th. Run	7.40 BF @ 9% Water	200' Fillup

Swab rate after making the six runs shown above = 10 BFPD = 240 BFPD
42% Water 139 BOPD 101 BWPD Gravity 42.6 at 102 degrees.

Ran rods, pump and hung on beam. To pump to tank battery overnight. To be tested in 210 test tank in A.M. Found fluid 2000' above seating nipple when going in with the rods, approximately 2800'.

Pump Size 2-1/2" X 2" X 16' RWAC Ni-Plate Ebl. Pump. No. Mur-4. Well pumped up. Had flowline leak shut in overnight.

5-26-69 Pumping No Test

5-27-69 Pumping Heath Sand No Test Water Cut 3:00 P.M. 5-26-69 10% Will test today.

5-28-69 Pumping from the Heath Sand 6 Hr. Test Pumped 27.64 BF 11% Water Cut 111 BFPD 99 BOPD 12 BWPD.

5-29-69 Pumping from the Heath Sand 6 Hr. Test Pumped 24.52 BF 11% Water Cut 98 BFPD 87 BOPD 11 BWPD

5-30-69 Pumping Heath Sand No Test

5-31-69 Pumping Heath Sand No Test

6-1-69 Pumping Heath Sand No Test

6-2-69 Pumping 4 Hr. Test Pumped 13.88 BF 12% Water 83 BFPD 73 BOPD 10 BFPD. Filling tanks to frac.

6-3-69 Pumping No Test

6-4-69 Prep. to Sand Frac No Test

6-5-69 4992' PSTD Prep. to attempt to release packer and reverse out sand.

Set Retrievmatic Packer at 4846' Tail pipe at 4877' Sand Frac Heath Sand perforations 4891-99' as follows:

Broke formation with 30 bbls. oil at 4200# at 9-1/2 BPM		
2000# 20-40 Sand at 1/2# per gallon	4100#	10 BPM
2000# 20-40 Sand at 3/4# per gallon	4050#	10 BPM
4000# 10-20 Sand and 12-20 Beads at 1# per gallon	4000#	10 BPM

Well sande out with 4000# 20-40 sand and 2000# 10-20 sand and 2000# 12-20 beads cut into formation. The 10-20 sand and 12-20 beads were mined. Total sand and beads out 8000# 24 Gallons H₂O gyp ban out.

Note: Packer developed leak. Have sand on top of packer and sand in tubing.

6-6-69 PSTD 4992' Tubing Pressure 50# Casing Pressure 0#
Hooked up test line and flowed well to tank. 30 min. flow rate 5.13 bbls. Well flowing approximately 1" stream. Hooked up Halliburton pump truck to kill well with salt water. Could not break circulation due to sand. Killed well. Installed stripper head. Released packer and worked same keeping 4000# PSI on tubing. Broke circulation and displaced hole with salt water. Reversed sand. Washed down 3 joints to clean hole below perforations and reversed out of hole.

Pulled tubing and retrieved Baker Retrievmatic packer. Ran production tubing in hole. Set Guiberson Tubing Anchor with 26,000# pull. Tied back and ran rods. Put on beam. Landed tubing at 4817' (end of tail pipe).

Pumping 50% Water this A.M. To test today.

6-7-69 4992' PSTD Pumping 4 Hr. Test Pumped 64.96 BF 18% BS&W = 390 BFPD 70 BOPD 320 BOPD

Load Oil Used	395
Recovered	320
Formation Oil	15

6-8-69 4992' PSTD Pumping 4 Hr. Test Pumped 67.26 BF 19% W.C. = 404 BFPD 327 BOPD 77 BOPD.

6-9-69 4992' PSTD Pumping No Test Rods Parted

6-10-69

Pumping from the Heath Sand

4 Hr. Test Pumped 57.69 BP 14% W.C. 298 BOPD 43 BHPD

This is the Heath Sand Initial Potential. To Drop From Report

The Heath Sand from East Poplar Unit 15 is produced through a metering separator with East Poplar Unit No. 7 then into East Poplar Unit "D" Battery and commingled with Madison Oil.

RECAP OF WORKOVER:

Final Perforations

4891' to 4899'

Final PBTD

4992'

Workover Potential:

346 BHPD 14% W.C.
298 BOPD 43 BHPD

Geologic Name of Producing
Zone:

Heath Sand

Results of Workover:

Workover Successful
Oil production was increased from 19
BOPD to 298 BOPD and the water was
decreased from 300 BHPD to 43 BHPD.

EAST POPLAR UNIT NO. 15WORKOVER HISTORY NO. 3Lease and Well Number: East Poplar Unit No. 15Field: East Poplar Unit County: Roosevelt State: MontanaWell Location: C NW NW Section 11, T28N, R51ESTATUS PRIOR TO PRESENT JOB:Date Completed: February 18, 1953 Date Last Workover: May, 1969Producing Zone: Heath Sand Perforations: 4891' to 4899'T.D.: 5817' PBWD: 4992' Cumulative Production: C-Zone 44,595 BO 171,050 BWE-1 & 2 Zone 425,514 BO 1,194,028 BW Heath Sand 22,117 BO 26,177 BWLast Test: 4/3/71 51 BFPD 89% W.C. 45 BWPD 6 BOPDJUSTIFICATION FOR WORKOVER:

To increase production by acidizing Heath Sand formation and treating formation with scale and corrosion inhibitor.

SUMMARY OF WORKOVER:

4-19-71 Rig up pulling unit to acidize in A.M.

4-20-71 PBWD 4992' Pulled rods. Pulled and strapped tubing out of hole. Ran Baker Model "R" single grip packer with 1 joint 2-3/8" tail pipe below packer. Ran seating nipple 1 joint above packer. Hydro-tested tubing in hole to 5000 PSI. Landed bottom of tail pipe at 4898'. Set Model "R" packer. Filled annulus and tubing. Pressured annulus to 1300 PSI. Broke formation with water down tubing with 2600 PSI at 2-1/2 BPM. Acidized Heath Sand perforations at 4891-4899' with 500 gallons 15% regular acid, with 4 gallons of inhibitor and 2 gallons emulsion breaker added. Followed acid with 110 gallons of HW-23 Treatolite (corrosion and scale inhibitor) mixed with 20 bbls. formation water. Over flushed chemical with 125 bbls. formation fluid. Acid on perforations 2 BPM at 2100 PSI. Formation broke to 1600 PSI at 2 BPM. Max. inj. rate 4 BPM Min. 1-1/2 BPM Average 3-1/2 BPM Instant S.I. 1600# Min. PSI 3000# Average PSI 2100# Min. 1600# 15 Min. S.I. 1500#. Bleed back 7 bbls. fluid to test tank. Well flowing approximately 1" stream. Rigged down Lowell. Installed valve and pressure gauge in tubing. Pressure increased to 300 PSI after 30 mins. S.I. Shut well in for the night.

4-21-71 4992' PBTD Pumping No Test

4-22-71 4992' PBTD Pumping 11 SPM 64" Stroke 1-1/2" Bore Pump Extra oil production 10 BO 20 Hrs.

4-23-71 4992' PBTD Pumping Production 8 BOPD 24 Hrs. = 160 BFPD 95% W.C. 152 BWPD 3 BOPD

4-24-71 4992' PBTD Pumping 98-99% Water No Test

4-25-71 4992' PBTD 4 Hr. Test Pumped 26.76 BF 99% W.C. 161 BFPD 2 BOPD 159 BWPD.

4-26-71 4992' PBTD 4 Hr. Test Pumped 26.72 BF 98% Water 160 BFPD 3 BOPD 157 BWPD

Water Chlorides 43,000 PPM

4-27-71 4992' PBTD Pumping Changed SPM from 11 SPM to 15.5 SPM Water Cut this AM 90%

4-28-71 4992' PBTD Pumping Fluid Level 2604' W.C. 88%

4-29-71 4992' PBTD Pumping Heater Treater trouble Est. Production 21 BOPD 87% Water = 162 BFPD 87% W.C. 21 BOPD 1414BWPD

4-30-71 4992' PBTD Pumping 4 Hr. Test Pumped 38.39 BF 260 BFPD 87% Water 50 BOPD 230 BWPD.

Workover Potential

NO DROP FROM REPORT.

RECAP OF WORKOVER:

Final Perforations:	4891' to 4899' - Unchanged
Final PBTD:	4992'
Workover Potential:	260 BFPD 87% W.C. 30 BOPD 230 BWPD
Geologic Name Of Producing Zone:	Heath Sand - Unchanged
Results Of Workover:	Production was increased from 8 BOPD to 30 BOPD - Workover Successful.

EAST POPLAR UNIT NO. 15SUPPLEMENT

September 12, 1969

S.I. 1 Hr. and 20 Mins.

Heath Zone - Pulled rods and ran Amerada B.H.P. bomb to determine fluid level. Made stops at the following depths:

Top	0
1000 =	0
2000 =	25
2500 =	35
3000 =	222
3500 =	403
4000 =	618

Fluid Level noticed (on Wireline at 2581'

Fluid Level calcated at 2472'

July, 1972

EAST POPLAR UNIT NO. 15

WORKOVER HISTORY NO. 4

Well Name and Number: East Poplar Unit No. 15

Field: East Poplar Unit County: Roosevelt State: Montana

Well Location: 2 1/2 N Section 11, T23N, R51E

STATUS PRIOR TO PRESENT JOB:

Date Completed: February 18, 1953 Date Of Last Workover: April, 1971

T.D.: 5317' PFWD: 4992' Cumulative Production: C-Zone 44,595 BO

171,852 BW B-1 & 2 425,514 BO 1,194,023 BW Meath Zone 26,519 BO 93,221 BW

Latest Test: June 4, 1972 234 BFWD 5 BOFD 229 BWFD 95% W.C.

JUSTIFICATION FOR WORKOVER:

East Poplar Unit No. 15 is producing at the rate of 5 BOFD which is uneconomical.

Squeeze the Meath formation and reopen the B-1 & 2 Zones. When the B-Zones were shut in they were producing at the rate of 319 BFWD 18 BOFD 200 BWFD 94% BSW. This was in May of 1959. The B-Zone production should be as good as the last test.

SUMMARY OF WORKOVER:

7-24-72 4992' PFWD Preparing to move in and rig up pulling unit. Pulled rods and tubing.

7-25-72 4992' PFWD Preparing to drill out squeeze job. Pulled rods and tubing - Picked up Baker Perforomatic Packer and Hydro-pressed to 4300'. Established injection rate at 3 BPM - 1000 PSI - Squeezed Meath perforations with 50 sacks Latex, .2% RR-6 added. Cleaned tool and staged cement for 1-1/2 hour at 5 min. intervals - Formation squeezed at 3500 PSI with 8-1/2 bbls. in formation. Left 3-1/2 bbls. in casing. Released pressure and got 1/2 bbl. bleed back. - Repressed. Held OK. Released packer and pulled tubing. S.I. overnight.

7-26-72 5728' PSTD Preparing to run tubing and rods.
 Went in hole with 4-3/4" bit and casing scraper to drill out cement. Tagged lost cement at 4718' - drilled out 181' of cement and pressure tested. Adjusted to 1500 PSI for 30 mins., Held OK. Drilled out 1 sack of cement and FAP bridge plug (4 hrs. and 30 mins.) and chased it past E-1 & 2 perforations at 5635-44 and 5654-54'. Pulled bit above perforations and shut in overnight.

7-27-72 5728' PSTD Pump testing
 No test - Pumping 100% water
 Went to 5728' and tagged bottom. Circulated hole clean. Ran tubing and rods. Put well to pumping. This is a new PSTD after chasing bridge plug to bottom.

7-28-72 5728' PSTD Pumping 100% water

7-29-72 5728' PSTD Pumping 100% water

7-30-72 5728' PSTD Pumping 100% water

7-31-72 5728' PSTD Pumping 100% water

8-1-72 5728' PSTD Pump testing
 4 Hr. test - Pumped 66.94 BW = 402 BWPD 400 BWPD 99% W.C. 2 BOPD

8-2-72 5728' PSTD Pumping - No Test

8-3-72 5728' PSTD Pump testing
 4 Hr. test Pumped 60.74 BW = 364 BWPD 357 BWPD 98% W.C. 7 BOPD

Pumped thru August 23

8-24-72 5728' PSTD Pump testing
 4 Hr. Test Pumped 61.54 BW = 369 BWPD 347 BWPD 94% W.C. 22 BOPD

WORKOVER POTENTIAL - TO DROP FROM REPORT

RESULTS OF WORKOVER:

Final Perforations:	5635-44' and 5654-54'
Final PSTD:	5728'
Workover Potential:	369 BWPD 347 BWPD 94% W.C. 22 BOPD
Geologic Name Of Producing Zone:	E-1 & 2
Results Of Workover:	E-1-42 were producing at the rate of 19 BOPD when shut in - this production was regained - Workover Successful.

DOWELL INCORPORATED

TREATMENT REPORT

TREATMENT NO.

DISTRICT #2 STATION Williston N. Dak. DATE 2-16- 1953

OWNER Murphy Corp LEASE E.P.G. WELL NO. 15
POOL E. Popular COUNTY ROOSEVELT STATE MONTANA
LOCATION _____ OWNER'S REPRESENTATIVE JAMES

WELL DATA

FORMATION Charles 'C' zone
PAY-FROM 5800 TO 5817
PRESENT TOTAL DEPTH 5817 P. B. FROM _____

PERFORATING DATA OR PAY ZONES

SHOTS/FT.	FROM	TO
<u>0.4</u>	<u>5800</u>	<u>5817</u>

PIPE DATA-

CASING SIZE 5-1/2" WT. 15.4
CASING DEPTH 5800 SKS. CEMENT 200
LINER SIZE 2" WT. 4
LINER DEPTH-FROM TO
LINER DESCRIPTION
TUBING SIZE 2" E.P.G. DEPTH 5806
PACKER-TYPE Baker Prod DEPTH 5780
PACKER FURNISHED BY OPERATOR DOWELL

PRODUCTION-

	OIL	WATER	G. O. R.
INITIAL			
PRESENT			

ACIDIZING, SHOOTING AND LOGGING RECORD-

COMPLETION DATA-

DATE _____ CABLE TOOL _____
ROTARY _____ DRILLING FLUID _____
SIZE OPEN HOLE _____

DETAILED RECORD OF TREATMENT

TIME PRESSURE
A.M. OR P.M. CASING TUBING

REMARKS 1st zone

TIME	CASING PRESSURE	TUBING PRESSURE	REMARKS	FILL	BBLs.
2:15	600	500	ARRIVAL AT LOCATION WITH 1000 GALS. OF DOWELL XFW		
7:38	600	800	START BLEEDING Acid To Bottom		
7:00	700	800	Acid spotted		
			SET PACKER		

TIME	CASING PRESSURE	TUBING PRESSURE	BBLs. OF ACID				REMARKS
			OUT OF TANKS	IN FORMATION	PER READING	PER MINUTE	
7:24	800	700	22	0	0	0	START Acid into formation
7:25	800	1600	24	1	1	1.0	START 24 bbl/gal flush
7:26	800	2800	25	2	1	1.0	SHUT PUMP DOWN
7:30	800	1100					RESUME PUMPING
7:31	800	2800	28	5	3		PUMPING STEADY
7:32	800	2800	31	8	3		INCREASE PUMPING
7:33	800	2800	34.5	11.5	2.5		
7:34	800	2800	38	15.0	2.5		
7:35	800	2800	42	19.0	4.0		
7:36	800	2800	46	23.0	4.0		
7:37	800	2800	47	24.0	1.0		all Acid in formation
		1700					SHUT DOWN PUMPING

LEFT LOCATION

IF TREATMENT IS NOT CONVENTIONAL LIMESTONE FORMATION TREATMENT TO INCREASE OIL OR GAS PRODUCTION, STATE PURPOSE OF TREATMENT.

R. Owen
SERVICE ENGINEER

GENERAL OFFICE COPY.

STATION OR DISTRICT MANAGER

DOWELL INCORPORATED

TREATMENT REPORT

TREATMENT NO.

DISTRICT Wichita #2 STATION Williston 918 DATE , 19

OWNER Murphy Corp LEASE E.D.H. WELL NO. #13
POOL 2-1-1 COUNTY Beaumont STATE MONTANA
LOCATION See OWNER'S REPRESENTATIVE JAMES

WELL DATA

FORMATION Charles "B" Zone
PAY-FROM 5626 TO 5664
PRESENT TOTAL DEPTH 5817 P. B. FROM

PERFORATING DATA OR PAY ZONES

SHOTS/FT.	FROM	TO
<u>4</u>	<u>5626</u>	<u>44</u>
<u>4</u>	<u>5654</u>	<u>64</u>

PIPE DATA-

CASING SIZE 5 1/2" WT. 15 1/2#
CASING DEPTH 5800 SKS. CEMENT 250
LINER SIZE 4 WT. 4
LINER DEPTH-FROM TO
LINER DESCRIPTION
TUBING SIZE 2" 2 9/16" DEPTH 5780
PACKER-TYPE Baker Pack DEPTH 57
PACKER FURNISHED BY OPERATOR YES DOWELL

PRODUCTION-

INITIAL	OIL	WATER	G. O. R.
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>PRESENT</u>	<u> </u>	<u> </u>	<u> </u>

ACIDIZING, SHOOTING AND LOGGING RECORD-

COMPLETION DATA-

DATE CABLE TOOL
ROTARY DRILLING FLUID
SIZE OPEN HOLE

DETAILED RECORD OF TREATMENT

TIME

PRESSURE

A.M. OR P.M.

CASING

TUBING

"13" ZONE

REMARKS

8:00

2125

57

ARRIVAL AT LOCATION WITH

GALB. OF DOWELL

XFW

12:15 PM

16-51

START CIRCULATING WATER WITH OIL

FILL

129

BBLB.

1:24

OIL CIRCULATED

BLEED

25

BBLB.

1:27

600

START BLEEDING ACID TO BOTTOM

FLUSH

24

BBLB.

BBLB. OF ACID

1:49

25

0

0

0

START ACID INTO FORMATION

1:50

1200

26

1

1

1.0

SHUT PUMP DOWN

1:52

2100

27

2

1

.5

RESUME PUMPING

1:53

2200

28

3

1

1.0

1:54

2300

32

7

4

4.0

INCREASE PUMP RATE

1:55

2150

36.5

11.5

4.5

4.5

1:56

2300

40.5

15.5

4.0

4.0

PUMPING STEADY

1:57

2325

44.5

19.5

4.0

4.0

1:58

2325

49.0

24.0

4.5

4.5

24661 ACID IN FORMATION

2:01

1450

SHUT DOWN PUMP

LEFT LOCATION

IF TREATMENT IS NOT CONVENTIONAL LIMESTONE FORMATION TREATMENT TO INCREASE OIL OR GAS PRODUCTION, STATE PURPOSE OF TREATMENT.

B. Owen

SERVICE ENGINEER

DISTRICT OFFICE COPY.

STATION OR DISTRICT MANAGER

DOWELL INCORPORATED

TREATMENT REPORT

TREATMENT No.

DISTRICT 42 STATION Williston N.D. DATE 2-18, 1953

OWNER MURPHY CORP. LEASE E.P.U. WELL NO. 15
POOL E. PUGLIE COUNTY ROOSEVELT STATE MONTANA
LOCATION 35E OWNER'S REPRESENTATIVE MR. JAMES

WELL DATA

FORMATION Charles C Zone
PAY-FROM 5800 TO 5817
PRESENT TOTAL DEPTH 5817 P. B. FROM _____

PERFORATING DATA OR PAY ZONES

SHOTS/FT.	FROM	TO
0.41	5800	5817

PIPE DATA—

DATA-
CASING SIZE 5-1/2" WT. 15.47
CASING DEPTH 5800 SKS. CEMENT 250
LINER SIZE L WT. L
LINER DEPTH-FROM L TO L
LINER DESCRIPTION _____
TUBING SIZE 2" EPH DEPTH 5806
PACKER-TYPE Raker Pump DEPTH 5706
PACKER FURNISHED BY OPERATOR 455 DOWELL

PRODUCTION—

	OIL	WATER	G. O. R.
INITIAL	_____	_____	_____
PRESENT	_____	_____	_____

ACIDIZING, SHOOTING AND LOGGING RECORD—

COMPLETION DATA-

DATE _____ CABLE TOOL _____
 ROTARY _____ DRILLING FLUID _____
 SIZE OPEN HOLE _____

DETAILED RECORD OF TREATMENT

TIME	PRESSURE	
A.M. OR P.M.	CABING	TUBING

REMARKS

REMARKS
1000 J2/X 500

ARRIVAL AT LOCATION WITH 2000 GALS. OF DOWELL XFW

2:38	800	0	START PUMPING JET in Tdg	FILL	0	BBLs
2:44	900	1800	1766/ Pumped bit Pressure	BLEED	0	BBLs
				FLUSH	24	BBLs

		BBLB. OF ACID				
		OUT OF TANKS	IN FORMATION	PER READING	PER MINUTE	
		22	0	0	6	START SET IN FORMATION
2:47	800	2000	24	2	2.0	ALL SET PUMPED START 48661
						Acid
2:49	800	2000	33	11	9	4.5 Pumping Steady
2:52	800	2800	51	29	18	4.5 Pumping Steady - Pressure Dropping
2:57	800	2750	69	47	18	4.5 " "
2:58	800	2350	72	50	3	2.0 ALL Acid Pumped START 24661
2:59	800	2400	75	53	3	2.0 Flush
3:01	800	2400	79	57	4	2.0
3:02	800	2200	83	61	4	4.0 PRESSURE DROPP
3:03	800	2200	87	65	4	4.0 Pumping Steady
3:04	800	2200	91	69	4	4.0 " "
3:05	800	2200	96	74	5	6.0 ALL Acid displaced. Job complete
3:10		1400				SHUT DOWN PRESSURE

LEFT LOCATION

IF TREATMENT IS NOT CONVENTIONAL LIMESTONE FORMATION TREATMENT TO INCREASE OIL OR GAS PRODUCTION, STATE PURPOSE OF TREATMENT.

B. Owen
SERVICE ENGINEER

STATION COPY.

STATION OR DISTRICT MANAGER

TREATMENT REPORT Acidizing SERVICE

DISTRICT #15 STATION 02 Glendive DATE 9-3, 1957

OWNER Murphy Corporation LEASE EPH WELL NO. 99
POOL EAST Packer COUNTY Beaverhead STATE MONTANA
LOCATION SEC 1-28-0-1W OWNER'S REPRESENTATIVE James + Freeman

FORMATION B-1 zone CASING SIZE 5 1/2" WEIGHT 15 1/2#
PAY FROM 5732 TO 5737 CASING DEPTH 5810 BAGS CEMENT 800
PRESENT TOTAL DEPTH 5746 P. B. FROM 5911 LINER: FROM _____ TO _____ SIZE _____ WT. _____
DATE WELL COMPLETED old SIZE O. H. _____ TUBING SIZE 2 1/2" EUE DEPTH 5728 PERF. _____

PERFORMING DATA OR PAY ZONES:

SHOTS/FOOT	FROM	TO
<u>7</u>	<u>5732</u>	<u>5727</u>

PACKER: TYPE Packer DEPTH 5728
TUBING: VOLUME 34 ALLOWABLE PRESSURE 4000
CASING: VOLUME _____ ALLOWABLE PRESSURE _____
PRODUCTION: INITIAL _____ PRESENT _____
ACID. SHOOTING & FRACTURING RECORD _____

TREATING MATERIALS:

TYPE	AMOUNT
<u>4000 (Retarded)</u>	<u>1000 gallons</u>

TREATING EQUIPMENT:

PUMPING EQUIPMENT TD Pump
MIXING OR BLENDING _____
FLUSH TANKS _____
OTHER Trailer

TIME A.M. OR P.M.	PRESSURE		BARRELS OF FLUID				REMARKS
	CASING	TUBING	OUT OF TANKS	IN FORMATION	PER READING	PER MINUTE	
<u>8:30</u>							ARRIVED AT LOCATION
<u>9:00</u>							Start 2456k Acid down Tubing
<u>9:11</u>							Start 10 bbl oil To Spurt Acid
<u>9:16</u>							Acid spotted. Set Packer
<u>9:26</u>	<u>400</u>	<u>250</u>	<u>34</u>	<u>0</u>	<u>-</u>	<u>-</u>	Start Acid in formation
<u>9:27</u>	<u>200</u>	<u>200</u>					Start down
<u>9:31</u>	<u>1100</u>	<u>2500</u>					Shutdown
<u>9:40</u>	<u>1400</u>	<u>3500</u>	<u>36</u>	<u>2</u>	<u>2</u>	<u>.3</u>	Shutdown
<u>9:48</u>	<u>1700</u>	<u>1900</u>					Resume Pumping
<u>9:54</u>	<u>1800</u>	<u>3450</u>	<u>38</u>	<u>4</u>	<u>2</u>	<u>.2</u>	Feeding Pressure
<u>9:57</u>	<u>1800</u>	<u>3500</u>	<u>38</u>	<u>5</u>	<u>1</u>	<u>.2</u>	
<u>9:59</u>	<u>1800</u>	<u>2750</u>	<u>40</u>	<u>6</u>	<u>1</u>	<u>.5</u>	
<u>10:01</u>	<u>1700</u>	<u>2800</u>	<u>42</u>	<u>8</u>	<u>2</u>	<u>1.0</u>	Increase Pump Rate
<u>10:03</u>	<u>1400</u>	<u>2800</u>	<u>45</u>	<u>12</u>	<u>3</u>	<u>2.5</u>	
<u>10:04</u>	<u>1500</u>	<u>2800</u>	<u>49</u>	<u>15</u>	<u>4</u>	<u>2.0</u>	
<u>10:06</u>	<u>1400</u>	<u>3400</u>	<u>52</u>	<u>18</u>	<u>3</u>	<u>3.0</u>	
<u>10:07</u>	<u>1200</u>	<u>3500</u>	<u>55</u>	<u>21</u>	<u>3</u>	<u>2.0</u>	
<u>10:08</u>	<u>1200</u>	<u>2000</u>	<u>58</u>	<u>24</u>	<u>3</u>	<u>3.0</u>	All Acid displaced. Start down
<u>10:13</u>	<u>1400</u>						5 minute shut in Pressure
<u>10:18</u>	<u>1500</u>						10 minute shut in Pressure

TOTAL BBLs. PUMPED: FILL & BREAKDOWN _____ TREATING FLUID 24 FLUSH 34
AVERAGE RATE: TREATING FLUID 3.0 GPM FLUSH 3.0 GPM
TREATING PRESSURE: MAXIMUM 3800 MINIMUM 3450

SERVICE ENGINEER R. D. Dyer STATION MANAGER _____

TREATMENT REPORT Acidizing SERVICE

DISTRICT #15 STATION 02 Glendive DATE 9-4, 1957

OWNER Murphy Corporation LEASE EP4 WELL NO. 89
POOL EAST Poplar COUNTY ROOSEVELT STATE MONTANA
LOCATION SEC 1-28. S14 OWNER'S REPRESENTATIVE James + Freeman

FORMATION R-1 204c CASING SIZE 5 1/2" WEIGHT 15.7
PAY FROM 5722 TO 5747 CASING DEPTH 5910 SACKS CEMENT 500
PRESENT TOTAL DEPTH 5764 P. B. FROM 5911 LINER: FROM TO SIZE WT.
DATE WELL COMPLETED 9/16 SIZE O. H. TUBING SIZE 2 1/2" x 45 DEPTH 5728 PERF.
PERFORATING DATA OR PAY ZONES: PACKER: TYPE Raker DEPTH 5728
TUBING: VOLUME 34 ALLOWABLE PRESSURE ✓
CASING: VOLUME ✓ ALLOWABLE PRESSURE ✓
PRODUCTION: INITIAL PRESENT
ACID. SHOOTING & FRACTURING RECORD

TREATING MATERIALS: TYPE 1c 1x100 (Retarded) AMOUNT 2000 gallons
BUNA-N-Nylon Balls 15
TREATING EQUIPMENT: PUMPING EQUIPMENT T.D. Pump
MIXING OR BLENDING
FLUSH TANKS
OTHER Transport

TIME A.M. OR P.M.	PRESSURE		BARRELS OF FLUID				REMARKS
	CASING	TUBING	OUT OF TANKS	IN FORMATION	PER READING	PER MINUTE	
2:20							ARRIVED AT LOCATION <u>Swabbing</u>
3:02							<u>Start 34 bbl Acid down Tubing</u>
3:20							<u>Tubing filled. Pressure casing</u>
							<u>To 2000 D. catch flush oil</u>
3:23							<u>Drop 10 balls down Tubing</u>
3:35 2600	VAL.		24	0	-	-	<u>Start Acid in formation</u>
3:36 2000	2650		37	3	3	3.0	<u>H.T. Pressure</u>
3:38 1800	2650		47	23	10	5.0	
3:40 1750	2650		57	23	10	5.0	
3:42 1600	3500		67	33	10	4.0	
3:43 1450	4200		72	38	5	5.0	<u>All Acid Pumped. Call on formation</u>
3:44 1500	4200						<u>Start 22 bbl oil flush</u>
3:47 1500	4200		84	50	12	4.0	<u>Shot down. Let balls fall out</u>
3:51 1000	3500						<u>Blid by 1 bbl out of formation</u>
3:57 1500	600						<u>Resume Pumping</u>
4:00 1500	2700						
4:03 1400	3650						
4:06 1400	3700						
4:09 1400	3700						
4:12 1400	3700		144	120	60	4.8	<u>All Acid displaced plus 38 bbl over/flush</u>
4:17	3000						<u>5 minutes shut in pressure</u>
4:22	2850						<u>10 minutes shut in pressure</u>

TOTAL BBLs. PUMPED: FILL & BREAKDOWN 34 TREATING FLUID 72 FLUSH 72
AVERAGE RATE: TREATING FLUID 5.0 RPM max 0.15 to 1.4 RPM FLUSH oil 2.0 RPM
TREATING PRESSURE: MAXIMUM 4200 MINIMUM 2500

SERVICE ENGINEER

STATION MANAGER

TREATMENT REPORT Pump SERVICE

DISTRICT #10 STATION 02 Glendive DATE 9-9, 1957

OWNER Murphy Corporation LEASE 840 WELL NO. 1-11
POOL EAST Poplar COUNTY ROOSEVELT STATE MONTANA
LOCATION SEC 30-29N-51E OWNER'S REPRESENTATIVE Ed Dowden

FORMATION DAKOTA SAND CASING SIZE 7" WEIGHT 24#
PAY FROM _____ TO _____ CASING DEPTH 4464 SACKS CEMENT 300
PRESENT TOTAL DEPTH 3411 P. B. FROM 3465 LINER FROM _____ TO _____ SIZE _____ WT. _____
DATE WELL COMPLETED NEW SIZE O. H. _____ TUBING SIZE 2 1/2" EPC DEPTH _____ PERF _____

PERFORMING DATA OR PAY ZONES:				PACKER: TYPE <u>DAKOR</u> DEPTH _____	
SHOTS/FOOT	FROM	TO		TUBING VOLUME _____	ALLOWABLE PRESSURE _____
<u>9</u>	<u>2046</u>	<u>3106</u>		CASING VOLUME _____	ALLOWABLE PRESSURE _____
<u>9</u>	<u>3146</u>	<u>3158</u>		PRODUCTION: INITIAL _____	PRESENT _____
<u>9</u>	<u>2190</u>	<u>3298</u>		ACID, SHOOTING & FRACTURING RECORD _____	
<u>9</u>	<u>3218</u>	<u>3228</u>			
<u>9</u>	<u>3344</u>	<u>3362</u>			

TREATING MATERIALS: TYPE Hydro balls AMOUNT 284
TREATING EQUIPMENT: PUMPING EQUIPMENT Illusion
MIXING OR BLENDING _____
FLUSH TANKS _____
OTHER Ball Injection

TIME	PRESSURE		BARRELS OF FLUID				REMARKS
	A.M. OR P.M.	CASING	TUBING	OUT OF TANKS	IN FORMATION	PER READING	PER MINUTE
<u>6:00 AM 9-8-57</u>							ARRIVED AT LOCATION well used for SALT water disposal 1 st Zone 3096 to 3106 & 3146-3158 Packer at 3070' injected 10 BPM at 2100#. Drop 44 balls pressure increased to 2190# @ 12 BPM
<u>Decreased Pump Rate To 800# injecting 2 BPM</u>							
<u>2nd Zone 3150-3298 Reset Packer at 3170' Formation Break @ 2800#</u>							
<u>To 2300# 14 BPM. Break to 1900# @ 12 BPM. Increased Pump Rate To</u>							
<u>275# 3.8 BPM Dropped 240 balls increase pressure from 1800# to 1900#</u>							
<u>10 BPM decreased to 425# @ 4 BPM</u>							
<u>3rd Zone 3218' to 3228' & 3344' to 3362' Reset Packer at 3315'</u>							
<u>Formation break to 2700# @ 8.2 BPM. Decrease Pump Rate to 1.5 BPM</u>							
<u>at 1500# Release Packer & shut in over night 11:00 PM</u>							
<u>8:00 AM 9-9-57</u>							Reported back to Location
<u>Set Packer at 3170' & start injecting into all formations. injecting</u>							
<u>10.1 BPM @ 1750#. For 60 minutes 605 bbls total. Decrease pump to</u>							
<u>820#. Injecting Rate 6.5 BPM at 870# 60 minutes 394 bbls pumped</u>							
<u>Decrease Pump Rate to 400#. Injecting Rate 4.1 BPM @ 400# 30</u>							
<u>minutes 122.8 bbls total pumped</u>							
<u>Released Tank 1:00 PM 9-9-57 Total 23 Hours working on</u>							
<u>well.</u>							

TOTAL BBLs. PUMPED: FILL & BREAKDOWN _____ TREATING FLUID _____ FLUSH _____
AVERAGE RATE: TREATING FLUID _____ FLUSH _____
TREATING PRESSURE: MAXIMUM _____ MINIMUM _____

SERVICE ENGINEER B. Owen STATION MANAGER _____

FILE
E.P. #15

WIRELINE, INC.
RADIOACTIVITY LOGGING
PERFORATING

Contract N° 5874

Rigman Ben

Charge to Worshipful Oil Corp.
Invoice 200 T-5000
Address Elkhardt, Ark
City Elkhardt, Ark
Ship to E 211 # 15
(or well no.)
Address East Dyke County Sumner
(or field)
VIA 4-30 State Ark

Invoice No. _____
 Invoice Date _____
 Customer's Order No. _____
 Date Shipped 7-24-69
 District 1011
 Operating Base 11

Legal Description_____

REF 7.1572

TO WIRELINE, INC. In consideration of the furnishing of your Long Beach Telephone Company service herein set forth, the undersigned agrees as follows: to-wit:

The undersigned, hereinafter referred to as the customer, agrees to pay you the amount of your published prices for said services at your _____ office. Should the amount due be not paid within the term fixed by the invoice, interest at six percent, from the date of invoice, will be charged and if placed with attorney for collection, the undersigned agrees to pay attorney's fees of twenty per cent of the invoice amount or the minimum of \$75.00.

The customer certifies that he is the owner of the well on which the work is to be done and that said well is in proper and suitable condition for the performance of said work and that all depth measurements shall be made under his supervision.

Because of the hazards existing in the performance of the work ordered, the customer agrees that you do not guarantee the results of your services, and that you are not to be held liable for injury to persons or property arising in the performance of said service.

The customer agrees to reimburse you for the reasonable value of any of your instruments, tools or equipment lost or damaged in the rendition of your service.

Customer agrees that the foregoing constitutes the entire agreement and that your employees have no authority to alter terms hereof.

To Be Paid By _____
(print correct name)

By _____
(signature of customer or authorized representative)

[illegible]

REMARKS	THRU TUBING	CASING	OPEN HOLE	
				50 ft. ...

TOOL	TYPE	SIZE		RUNS	LOADS	SHOTS	HOLES	MISSES			
		Gun	Bullet					D	G	L	C
4.7.5. PERF.		5.7	300		1	9	9				
1-1		120		1		1					
1-1				1							

I certify that the above ordered services and/or products have been received

[Signature]

Customer or authorized representative

I certify that the above ordered services and/or products have been received

(customer or authorized representative)

DOWELL

BWL-494-J PRINTED IN U.S.A.

WEST DIVISION OF THE DOW CHEMICAL COMPANY

DATE _____

4-20-71

WELL NAME AND NUMBER E.P.U. #15		LOCATION Sec 11-28N-51E		CUSTOMER REPRESENTATIVE MRL DeGering		TREATMENT NUMBER 15-2-6724	
POOL East Poplar Unit		FORMATION Heath		JOB DONE BY TUBING A <input checked="" type="checkbox"/> CASING B <input type="checkbox"/> ANNULUS C <input type="checkbox"/>		ALLOWABLE PRESSURE TDS: _____ CSG: _____	
COUNTY ROOSE		STATE Montana		TYPE OF WELL OIL A <input checked="" type="checkbox"/> GAS B <input type="checkbox"/> WATER C <input type="checkbox"/> INJ. D <input type="checkbox"/>			
TYPE OF SERVICE Acid				AGE OF WELL NEW WELL A <input type="checkbox"/> REWORK B <input checked="" type="checkbox"/>		TOTAL DEPTH PBTD 4892	
CUST. NAME Murphy Oil Corporation		Casing Size 5 1/2		Casing Depth		Tubing Size 2 7/8	
ADDRESS Murph Bldg.		Liner Size		Liner Depth		Tubing Depth 4898	
				Packer Type 2 Ker		Packer Depth 4867	
CITY, STATE & ZIP CODE El Dorado, ARK.		OPEN HOLE		CSG. OR ANRL. VOL.		TBG VOLUME 28.4	
REMARKS: Acidize perfs with 500 gal Reg.				STATIC BHT.			
PERFORATED INTERVALS							
DEPTH		NO. OF HOLES		DEPTH		NO. OF HOLES	
7891-78							
FOR CONVERSION PURPOSES 24 BBLs EQUALS 1000 GALLONS							
ARRIVED ON LOCATION: 1100							

TIME	INJECTION		PRESSURE		SERVICE LOG
	RATE	BBLS IN	CSG.	TBG.	
					SAFETY MEETING Hookup-
330			0	0	START WATER VIA CASING.
0337		40	400	0	Casing Full-
0340					START WATER VIA Tubing-
0343	2 1/2	12	1500	2100	Tubing Full- Pressure Casing To 1300psi-
0350	2	24	1100	2600	- STOP pump - START Acid
0358	2	38	900	2100	STOP pump MIX CHEMICAL - 2 Drums in 20 BBL
0408			1500	400	PRESSURE casing To 1500psi - WITH WATER
0411	1 1/2		1500	2300	START Chemical - via Tubing Flush with WATER
0416	1 1/2	48	1700	2600	Acid on perfs - Pressure drop To 1600psi-
0423	2	55	1500	1600	INCREASE RATE TO 4 BPM-
0424	4	60	1400	2000	Acid Displaced
0515	4	250	1200	2100	Job Completed-
					ISIP- 16.00
					Max Rate- 4 BPM
					Max psi- 300
					Min Rate- 1 1/2 BPM
					Avg psi- 2100
					Avg. Rate- 3 1/2 BPM
					Min psi- 1600
					TOTAL Lead- 260 BBL

TIME LEFT ON PUMP 6:30	AVG. LIQUID INJ. RATE	ADJ. RATE (SOLIDS INJ)	TOTAL FLUID PUMPED OIL WATER		PROPS AND LIQUIDS INJECTED		
MAX. PRESSURE	AVG. PRESSURE	FINAL PUMP IN PRESSURE	SHUT IN PRESSURE IMMEDIATE 5 MINUTES		TYPE	SIZE OR PURPOSE	AMOUNT
3000	2100	2100	1000	1500	Reg	15% M-38	500 gal 2 gal
DOWELL LOCATION Blondrie		DOWELL ENGINEER D C Set					
CALL BACK	DATE	CUSTOMER REP. CONTACTED	CUSTOMER CONSIDERED SERVICE	<input type="checkbox"/> SATISFACTORY <input type="checkbox"/> UNSATISFACTORY <input type="checkbox"/> UNKNOWN	PROD. BEFORE TREATMENT <input type="checkbox"/> TEST	PROD. AFTER TREATMENT <input type="checkbox"/> ALLOWABLE	<input type="checkbox"/> TEST <input type="checkbox"/> ALLOWABLE

STIMULATION TREATMENT REPORT

DOWELL

DATE

3-13-72

DWL-494-J PRINTED IN U.S.A.

WELL DIVISION OF THE DOW CHEMICAL COMP

WELL NAME AND NUMBER

F. P. U. 15

LOCATION

SEC 11-28N-51E

CUSTOMER REPRESENTATIVE

MR. Waring

TREATMENT NUMBER

15-2-7240

POOL

EPU

FORMATION

NEATH

TUBING

A ☐

CASING

B ☐

ANNULUS

C ☐

TBG:

CSG:

COUNTY

ROOSEVELT

STATE

Montana

TYPE OF SERVICE

Acid-

OIL

A ☐

GAS

B ☐

WATER

C ☐

INJ.

D ☐

AGE OF WELL

NEW WELL A ☐REWORK B ☐

TOTAL DEPTH

4992

CIRC. BHT.

CASING SIZE

27/8

CASING DEPTH

TUBING SIZE

TUBING DEPTH

LINER SIZE

LINER DEPTH

PACKER TYPE

PACKER DEPTH

OPEN HOLE

CSG. OR ANHL. VOL.

TBG VOLUME

STATIC BHT.

PERFORATED INTERVALS

DEPTH	NO. OF HOLES	DEPTH	NO. OF HOLES	DEPTH	NO. OF HOLES
4891-99					

CITY, STATE & ZIP CODE

REMARKS:

El Dorado, ARK.

Pump Corrosion Inhibitor Acid.
Sealant Inhibitor via Casing.

FOR CONVERSION PURPOSES 24 BBLs EQUALS 1000 GALLONS

ARRIVED ON LOCATION:

0800

TIME	INJECTION		PRESSURE		SERVICE LOG
	RATE	BBLs IN	CSG.	TBG.	
0945					Safety Meeting Hookup-
0925			0	0	Pressure Tubing with Rod Pump-
0942	5	77	300	300	START 12 BBL Treated oil. Followed by S/W.
0950					Hole Full.
1030					Stop pump mix chemical-
1041	1	12	200	200	START Acid - 500gal-
1110	1 1/2	46	800	800	Acid in START Treated S/W.
1148			0	0	STOP pump - Repair well Head Leak.
1204	1 1/2	77	1200	1200	START Pump-
1225	1 1/4	102	1200	1200	Acid on PERFS - No pressure drop-
1335	1 1/2	222	1200	1200	Treated S/W in Casing START S/W
			1400	1400	Job Completed-

TIME LEFT LOCATION		AVG. LIQUID INJ. RATE		ADJ. INJ. RATE (SOLIDS INC.)		TOTAL FLUID PUMPED		PROPS AND LIQUIDS INJECTED		
								TYPE	SIZE OR PURPOSE	AMOUNT
1430		1 1/4				OIL 12 WATER 298			15X	500gal
MAX. PRESSURE		AVG. PRESSURE		FINAL PUMP IN PRESSURE		SHUT IN PRESSURE			21-38	2gal-
						IMMEDIATE 1225 15 MINUTES 1150				
DOWELL LOCATION		DOWELL ENGINEER		PROD. BEFORE TREATMENT		PROD. AFTER TREATMENT				
Blondie		DC Hef		<input type="checkbox"/> SATISFACTORY <input type="checkbox"/> UNSATISFACTORY <input type="checkbox"/> UNKNOWN		<input type="checkbox"/> TEST ALLOWABLE		<input type="checkbox"/> TEST ALLOWABLE		

PRODUCTION &
INJECTION DATA



